

Stonington Coastal Resilience Plan

Town of Stonington, Connecticut
Public Meeting May 4, 2017

Social Media:
#StoningtonReady
@StoningtonCTGov
@ArupAmericas



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CivicMoxie™
experts in place



Why this study...



Source: The Westerly Sun

The impact of Superstorm Sandy could have been much worse. We want to learn from that experience and plan ahead to:

- protect public infrastructure from coastal flooding and sea level rise
- minimize potential for loss of life and destruction to property
- identify ways to enhance coastal resources

Goals for this Meeting

1. Present Stonington's most at-risk properties.
2. Discuss proposed resilience solutions.
3. Gather feedback from residents on their biggest concerns during a coastal flood event.



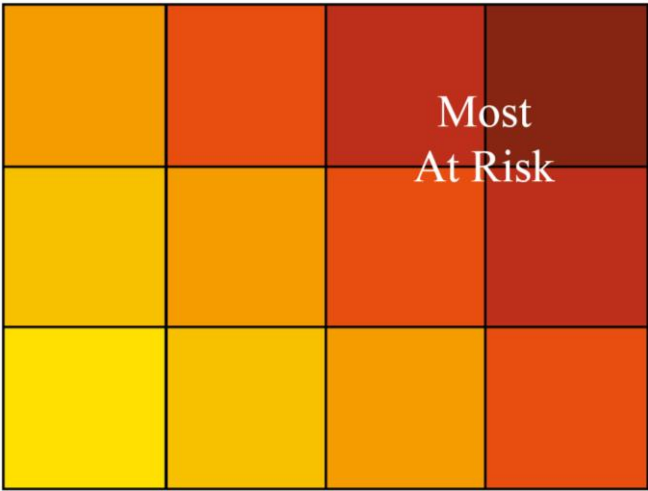
Overview of Approach

Step 1



Establishing a climate baseline

Step 2



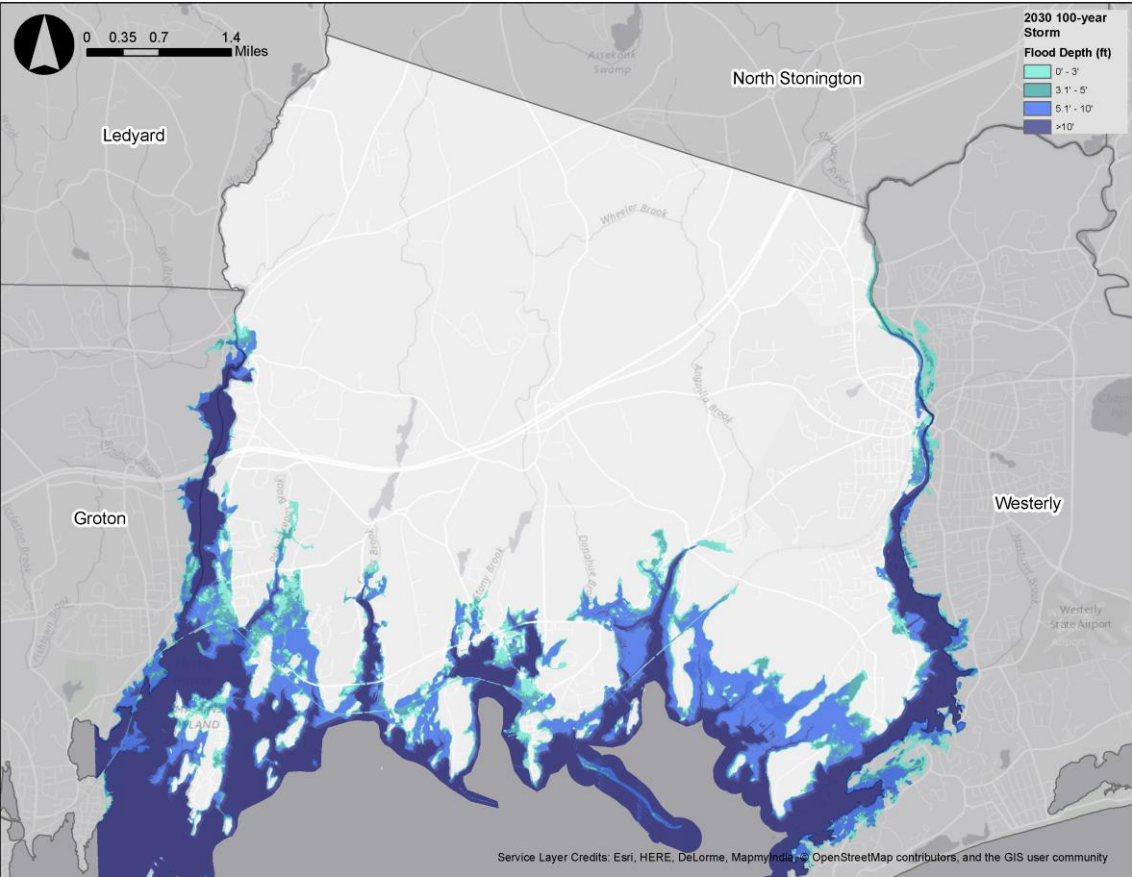
Ranking risk

Step 3

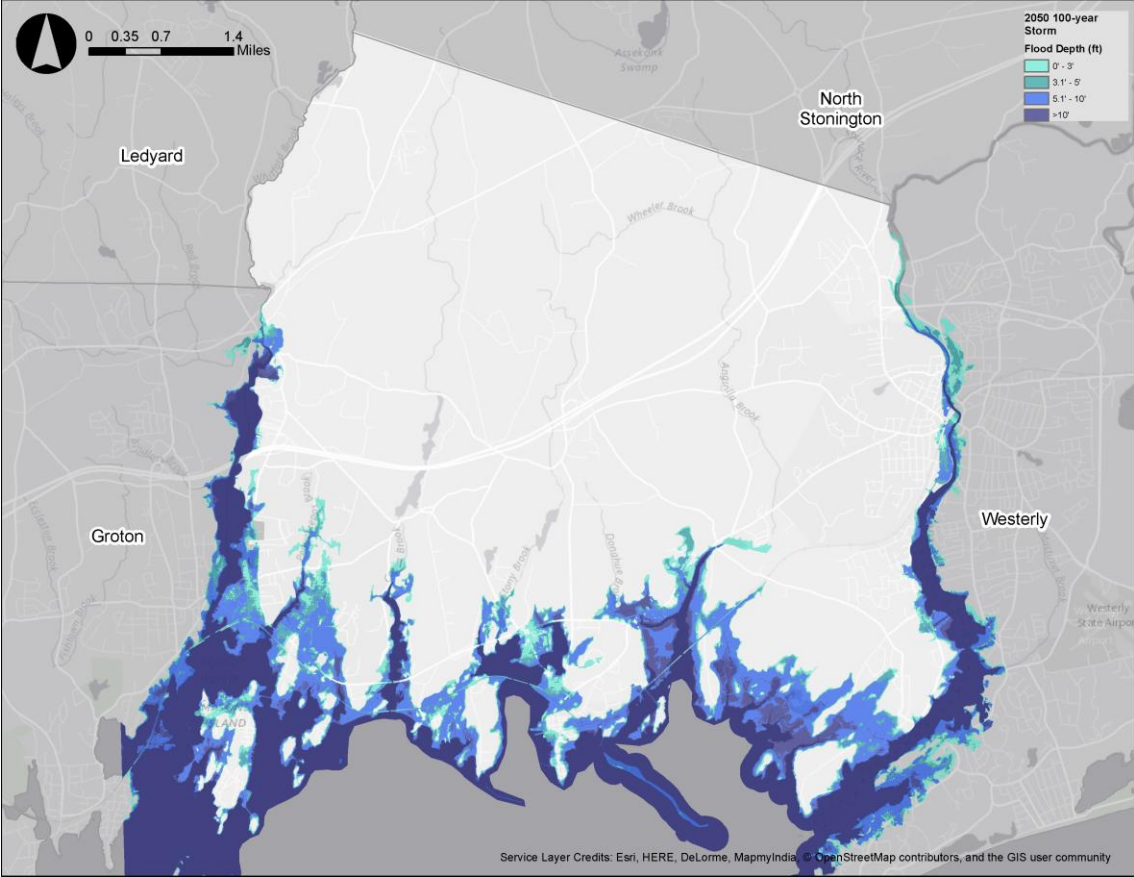


Developing solutions

Step 1: Climate Baseline

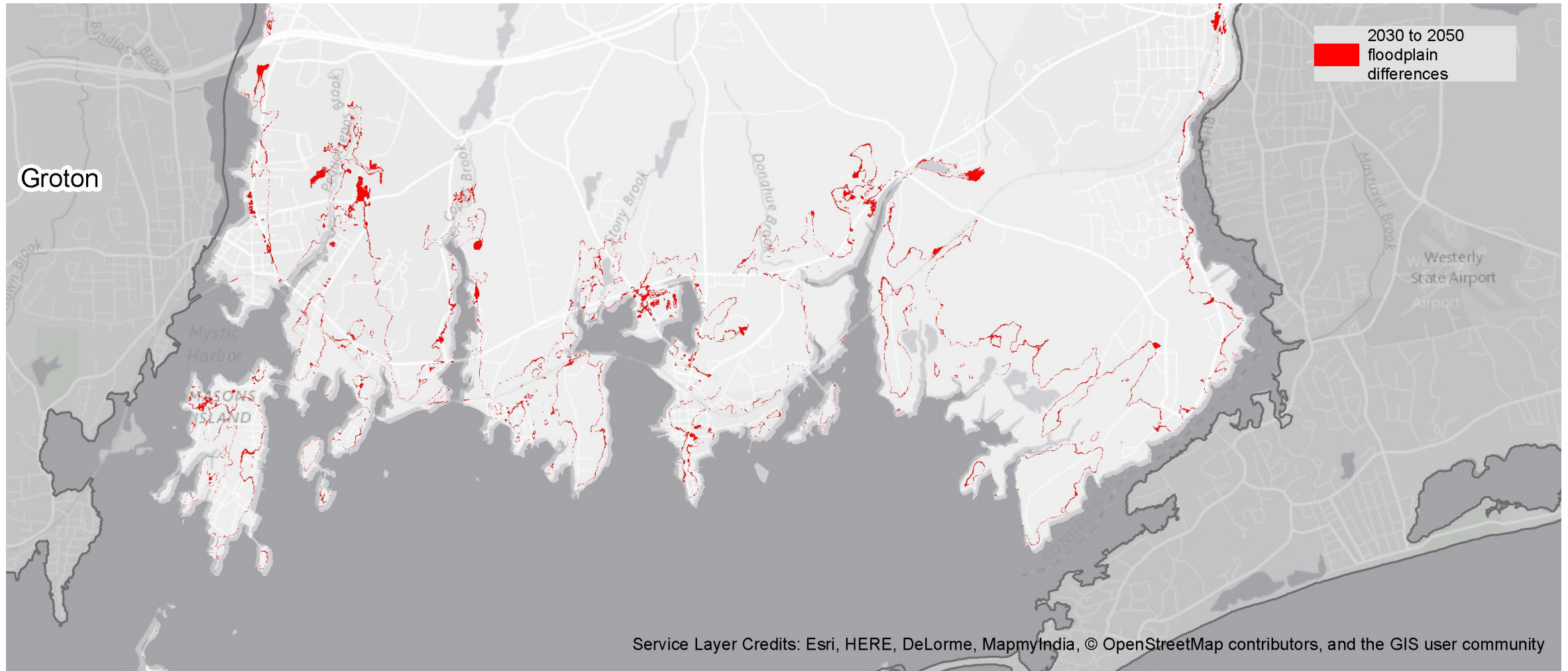


2030 100-year Storm



2050 100-year Storm

Change in Flood Extents

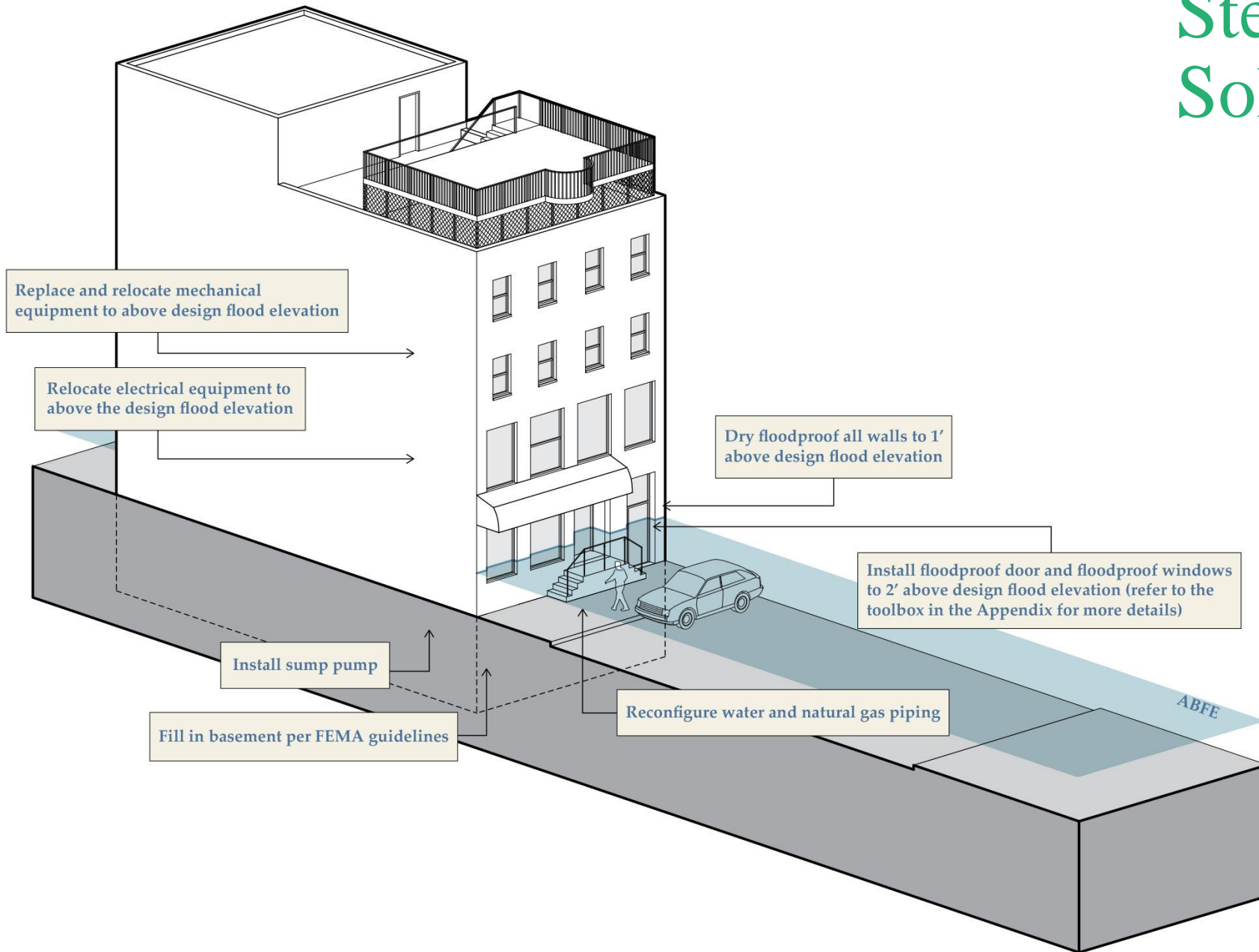


Step 2: Risk Assessment

Risk = Hazard x Exposure x Vulnerability

- **Hazard** = Storm Event (i.e. Present-day 100-year storm, 100-year storm in 2030, 1000-year storm in 2050)
- **Exposure** = Depth of Flooding
- **Vulnerability** = An Assessment of:
 - Impact on community
 - Critical Facilities
 - Replacement Cost
 - Economic impact to tourism (including historic resources)

Step 3: Resilience Solutions

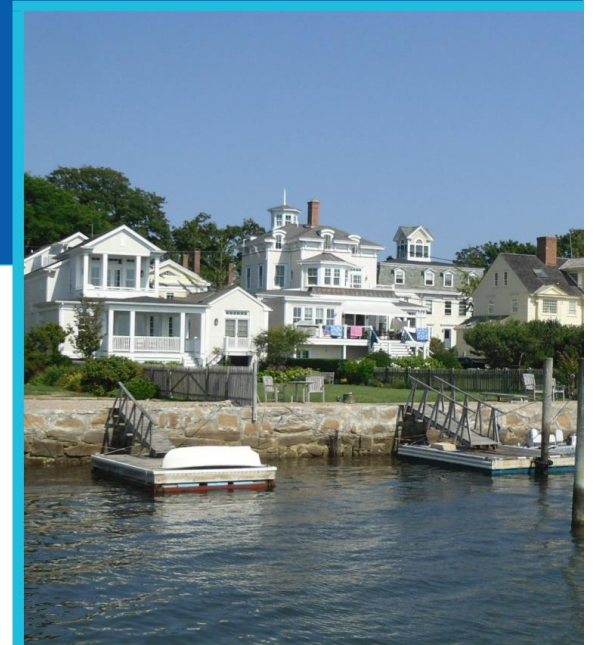


Overview of Coastal Resilience Plan

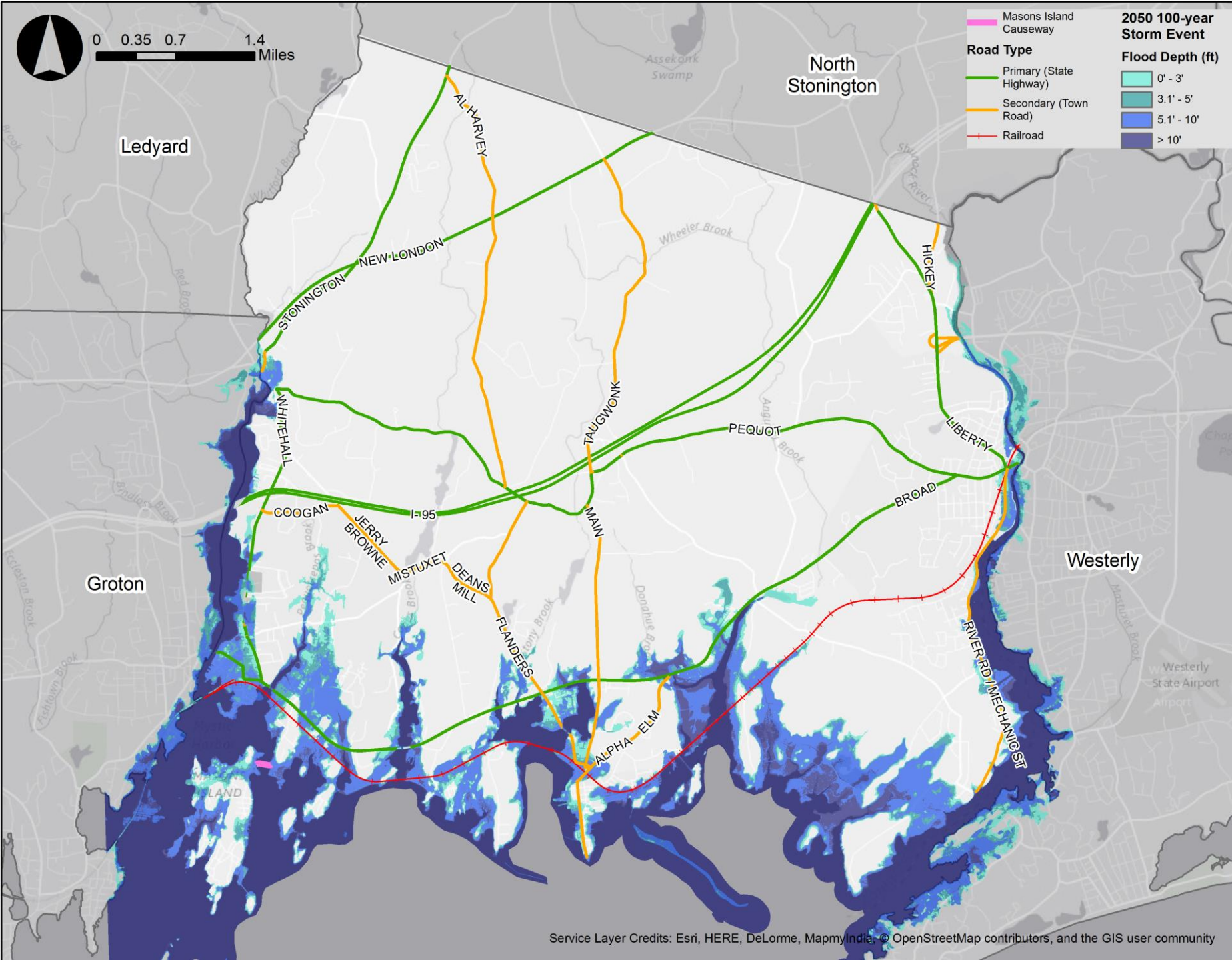
The plan will ultimately include:

- High-level analysis of **at-risk neighborhoods** and **proposed regional adaptations**
 - Regional Adaptations will be discussed later in the presentation
- Overview of **Top 25** most at-risk assets with high-level resilience solutions
- Detailed analysis of **Top 5** most at-risk assets with proposed resilience solutions
 - Draft solutions will be presented tonight

Town of Stonington
Coastal Resilience Plan



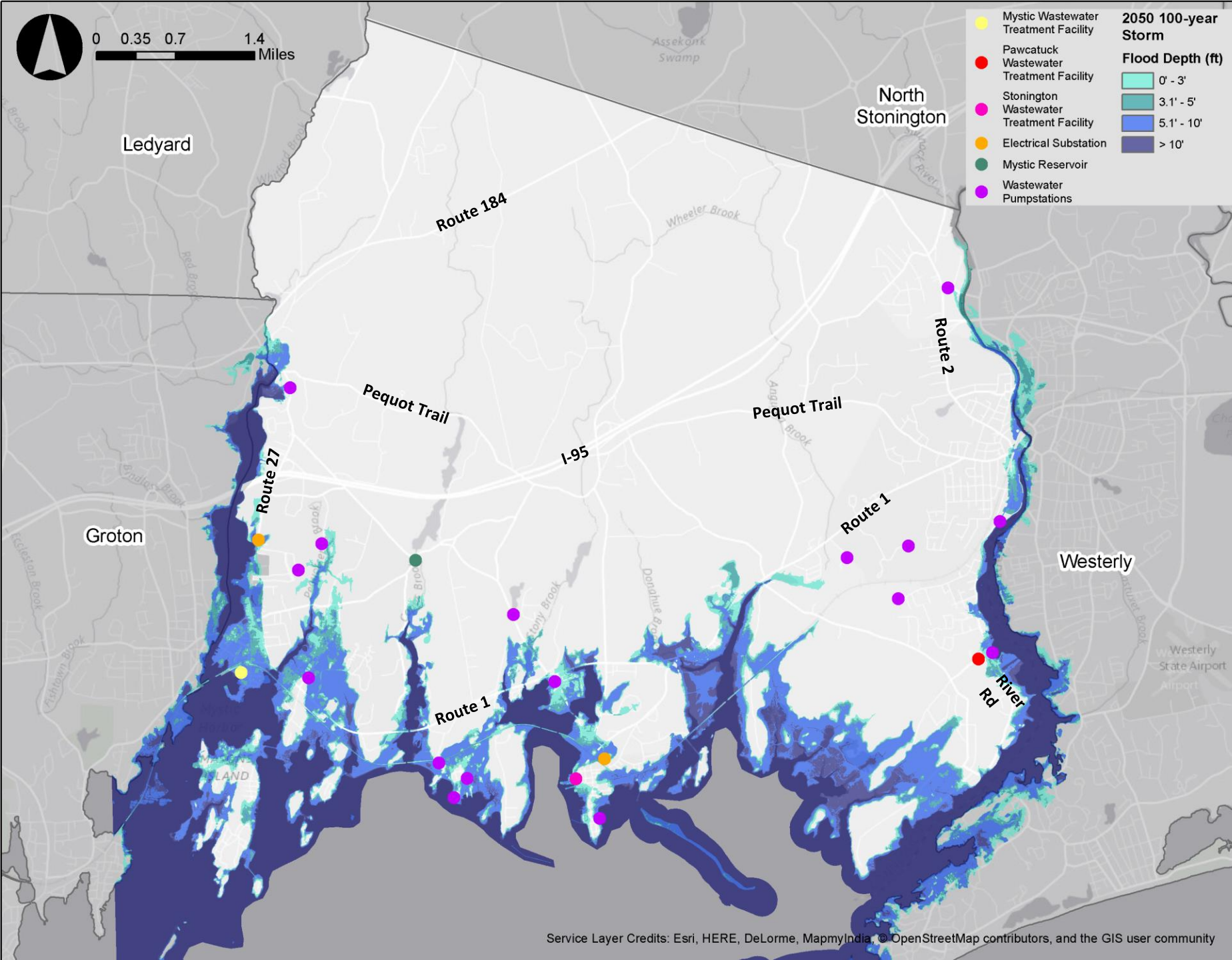
Risk Assessment



Transportation

Most Vulnerable:

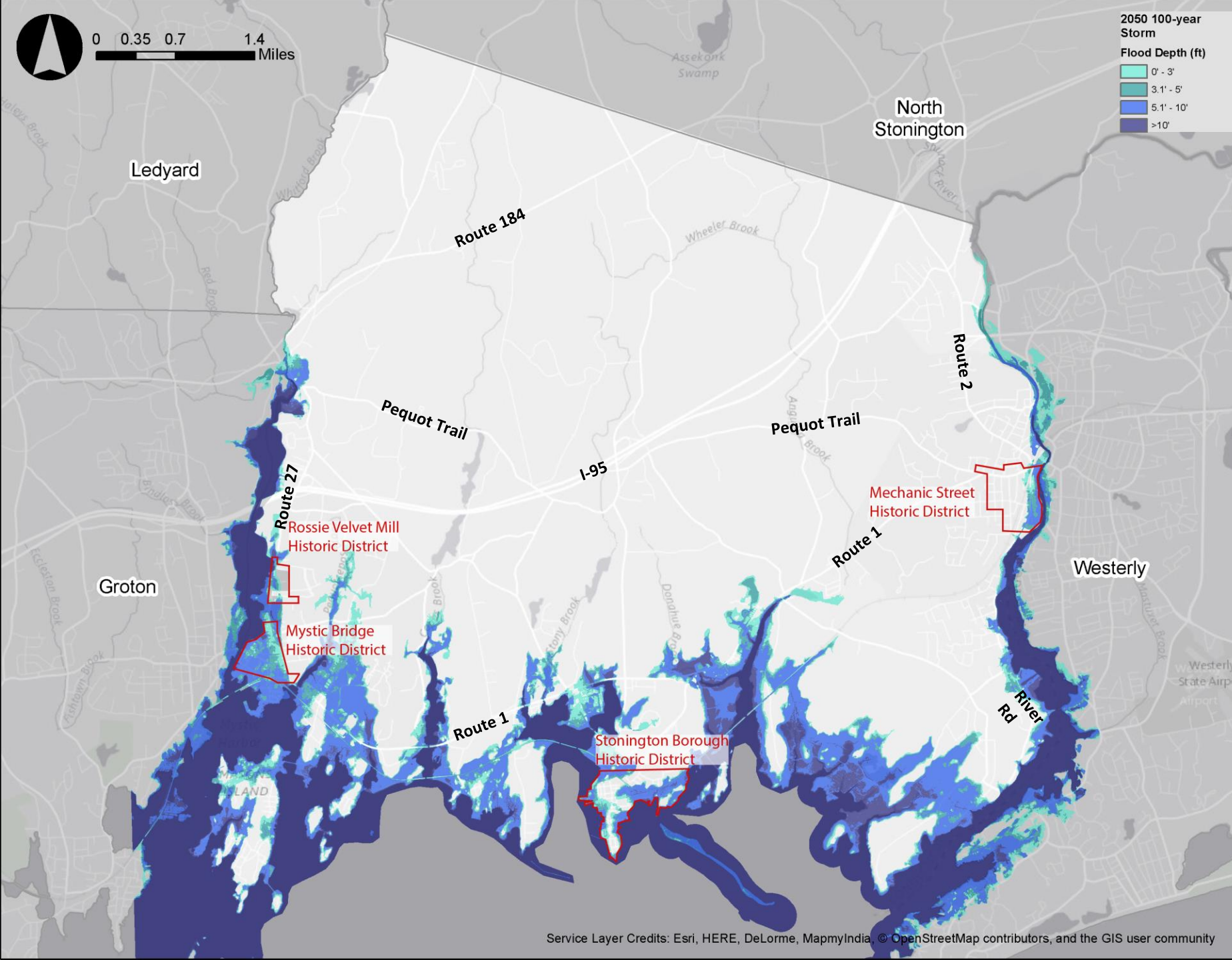
- Masons Island Causeway
- State Highway 27
- State Highway 1



Utilities

Most Vulnerable:

- Mystic Wastewater Treatment Facility
- Boulder Avenue Pump Station
- River Road/Mary Hall Road Pump Station
- Stonington Wastewater Treatment Facility
- Greenmanville Ave Electrical Substation
- Cutler Street Electrical Substation



Historic Districts

Most Vulnerable:

- Rossie Velvet Mill Historic District
- Mystic Bridge Historic District
- Stonington Borough Historic District
- Mechanic Street Historic District



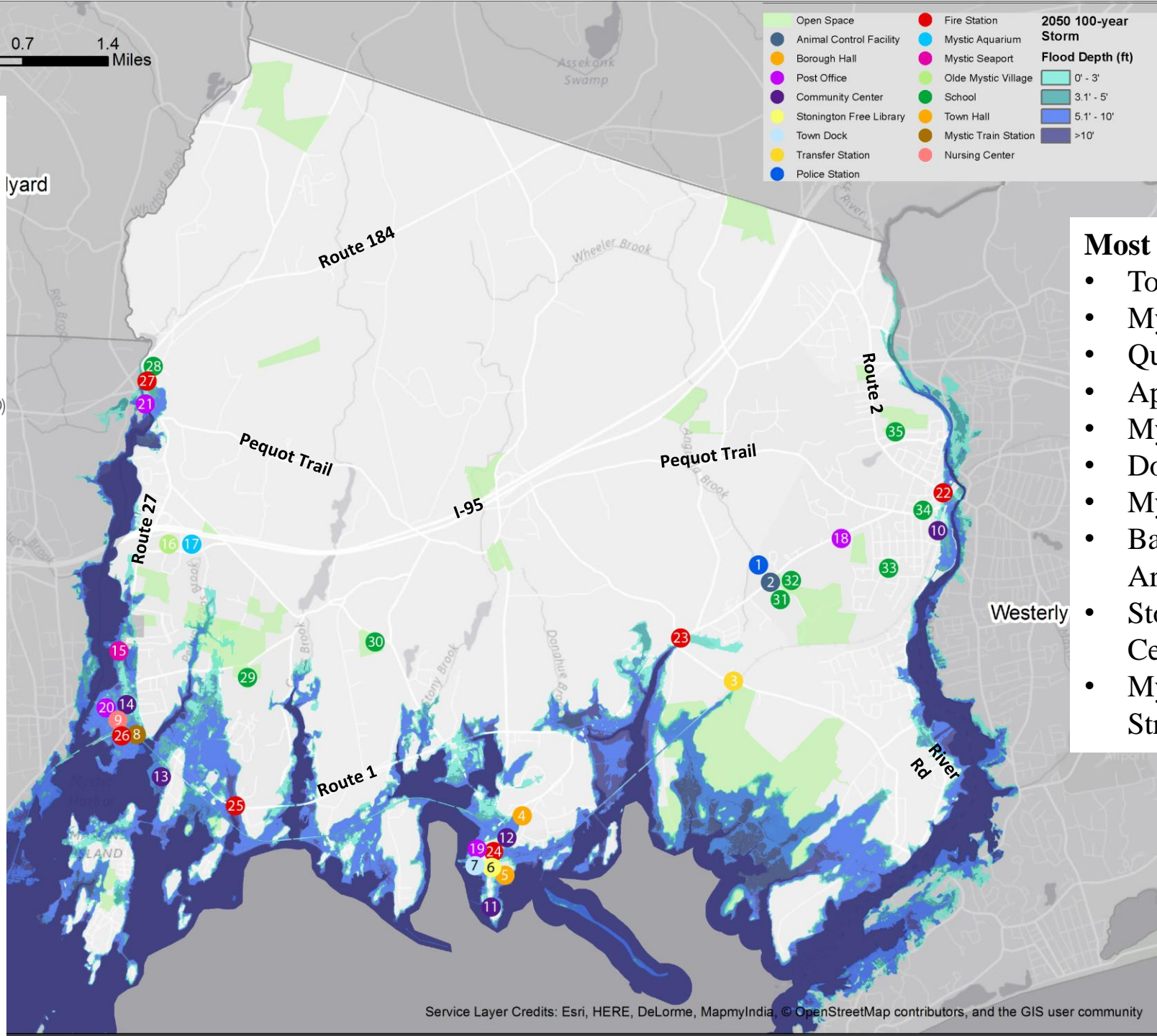
0 0.35 0.7 1.4 Miles



Community Facilities

Most Vulnerable:

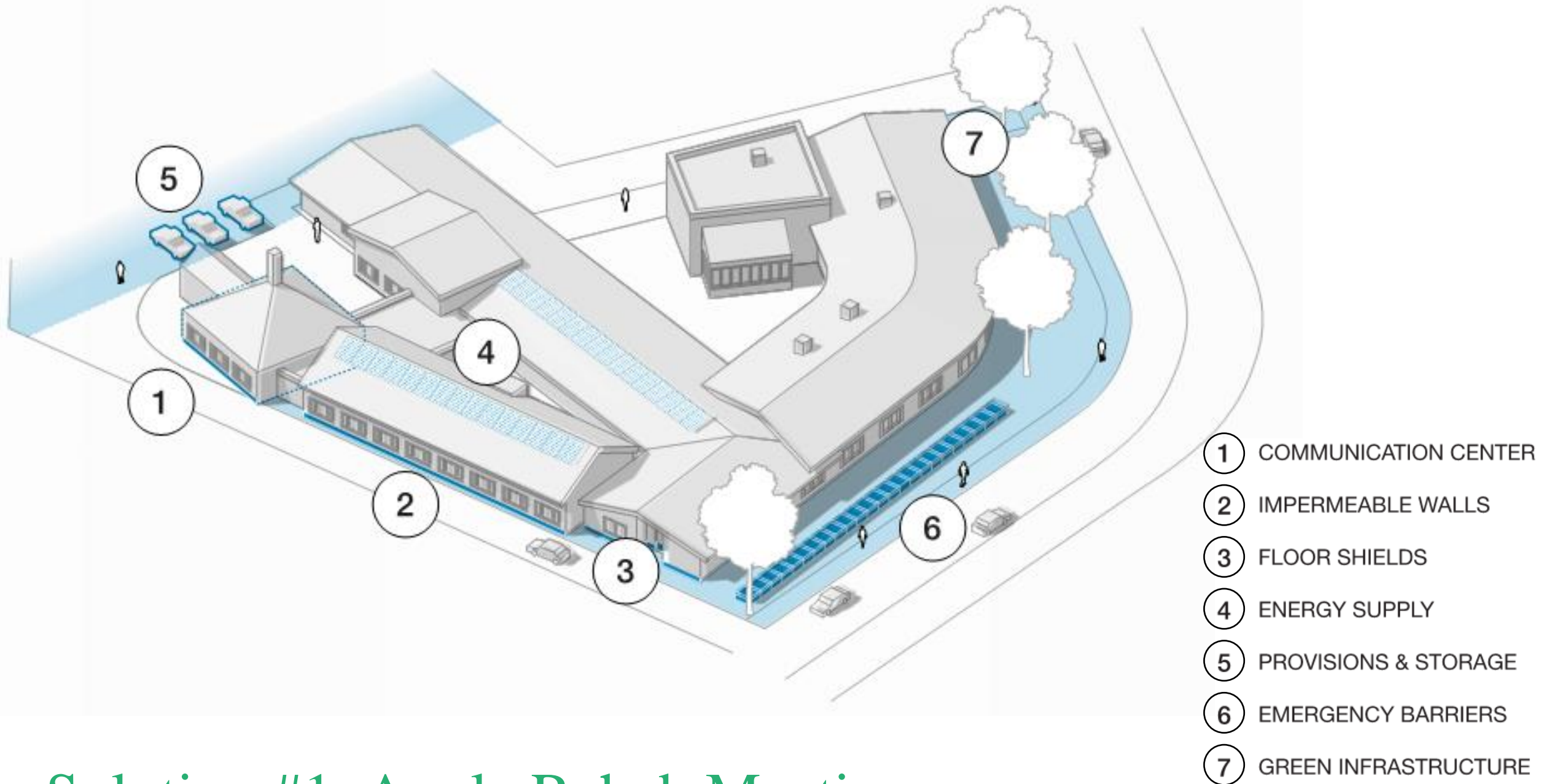
- Town Dock
- Mystic Fire Department
- Quiambaug Fire Department
- Apple Rehab Mystic
- Mystic Seaport
- Donahue Park
- Mystic Train Station
- Barn Island Management Area
- Stonington Community Center (COMO)
- Mystic River Park (Cottrell Street)



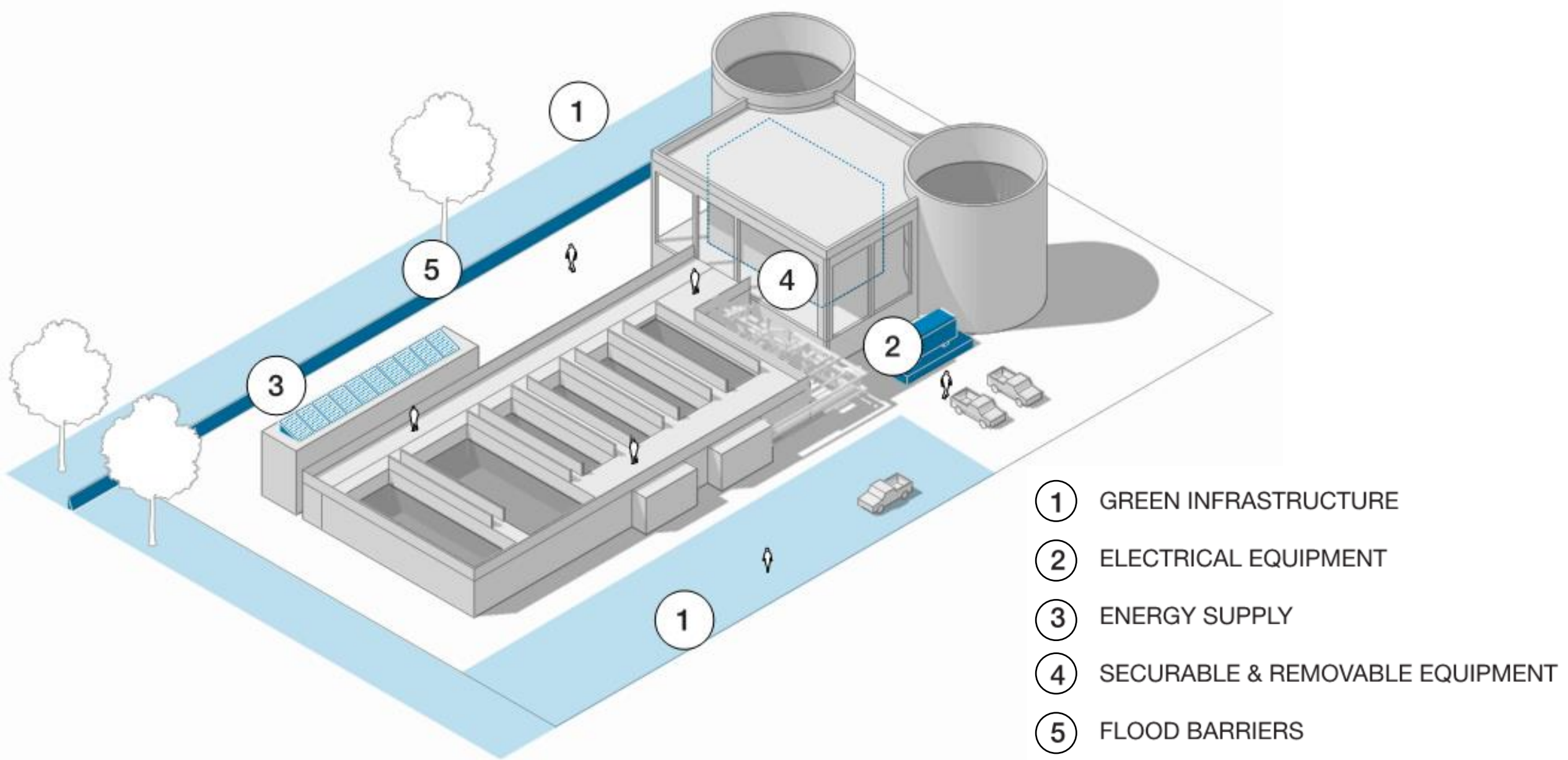
Service Layer Credits: Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community

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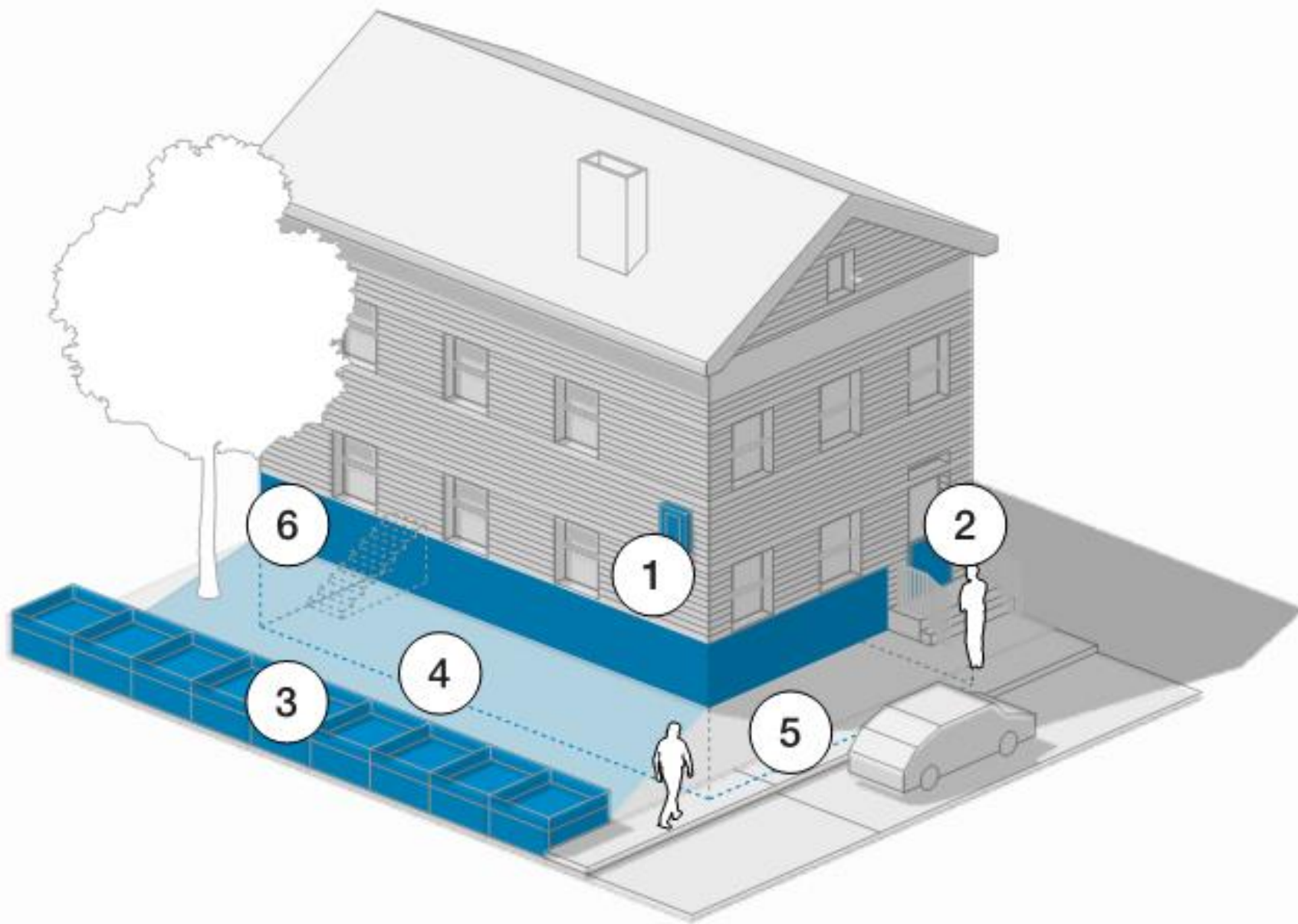
Proposed Resilience Solutions



Solution #1: Apple Rehab Mystic

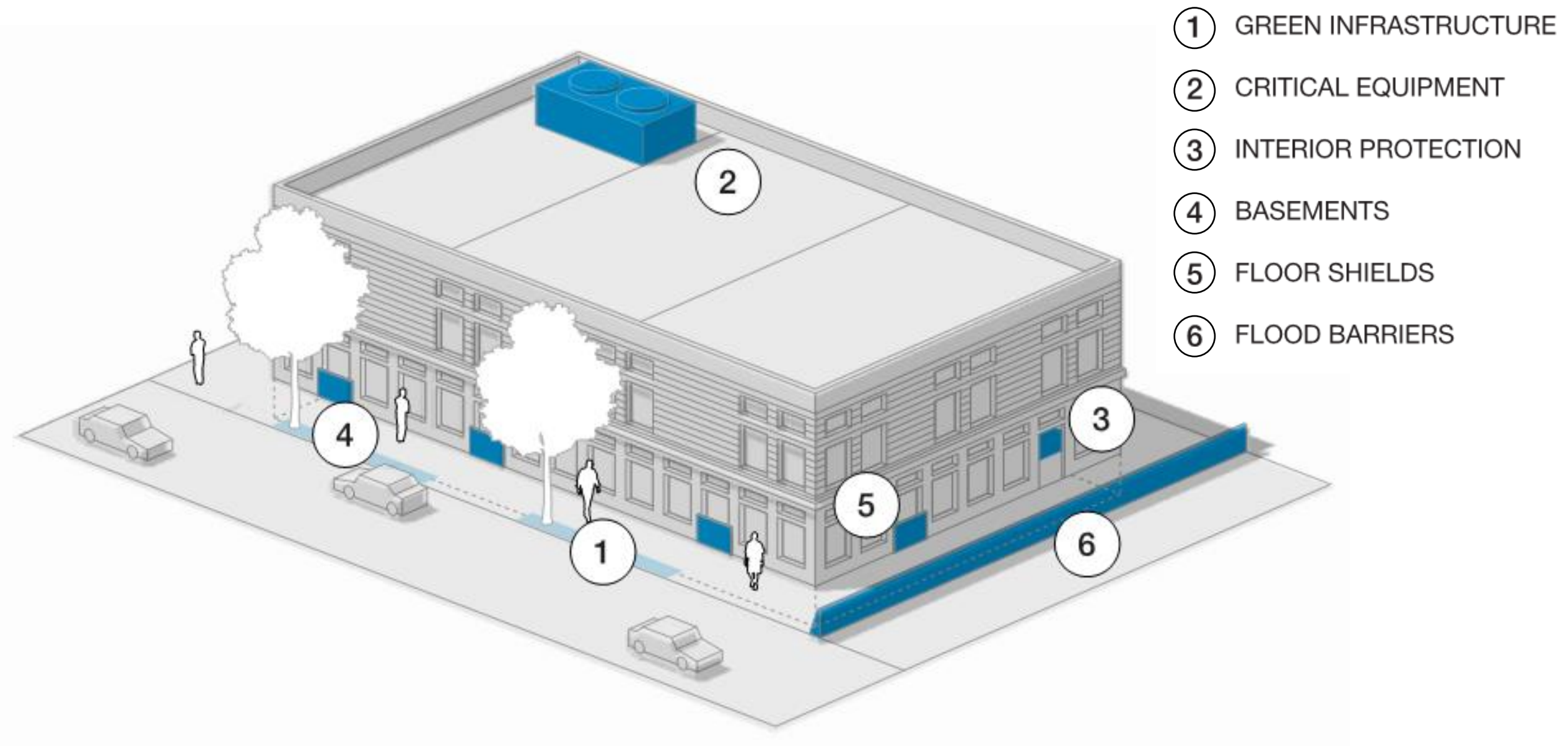


Solution #2: Mystic Wastewater Treatment Facility



- ① ELECTRICAL WIRING
- ② FLOOR SHIELDS
- ③ EMERGENCY BARRIERS
- ④ LANDSCAPING
- ⑤ IMPERMEABLE WALLS
- ⑥ BASEMENT

Solution 3(a): Typical Single-Family Home



Solution #3(b): Typical Mixed-Use Building



- ① MYSTIC POST OFFICE
- ② APPLE REHAB MYSTIC
- ③ FOURTH DISTRICT VOTING HALL
- ④ MYSTIC AMTRAK STATION
- ⑤ MYSTIC FIRE STATION
- ⑥ MYSTIC RIVER PARK
- ⑦ MYSTIC RIVER PARK PLAYGROUND
- ⑧ WASTEWATER TREATMENT PLANT
- ⑨ MAIN STREET BRIDGE

Solution #4: Mystic Neighborhood



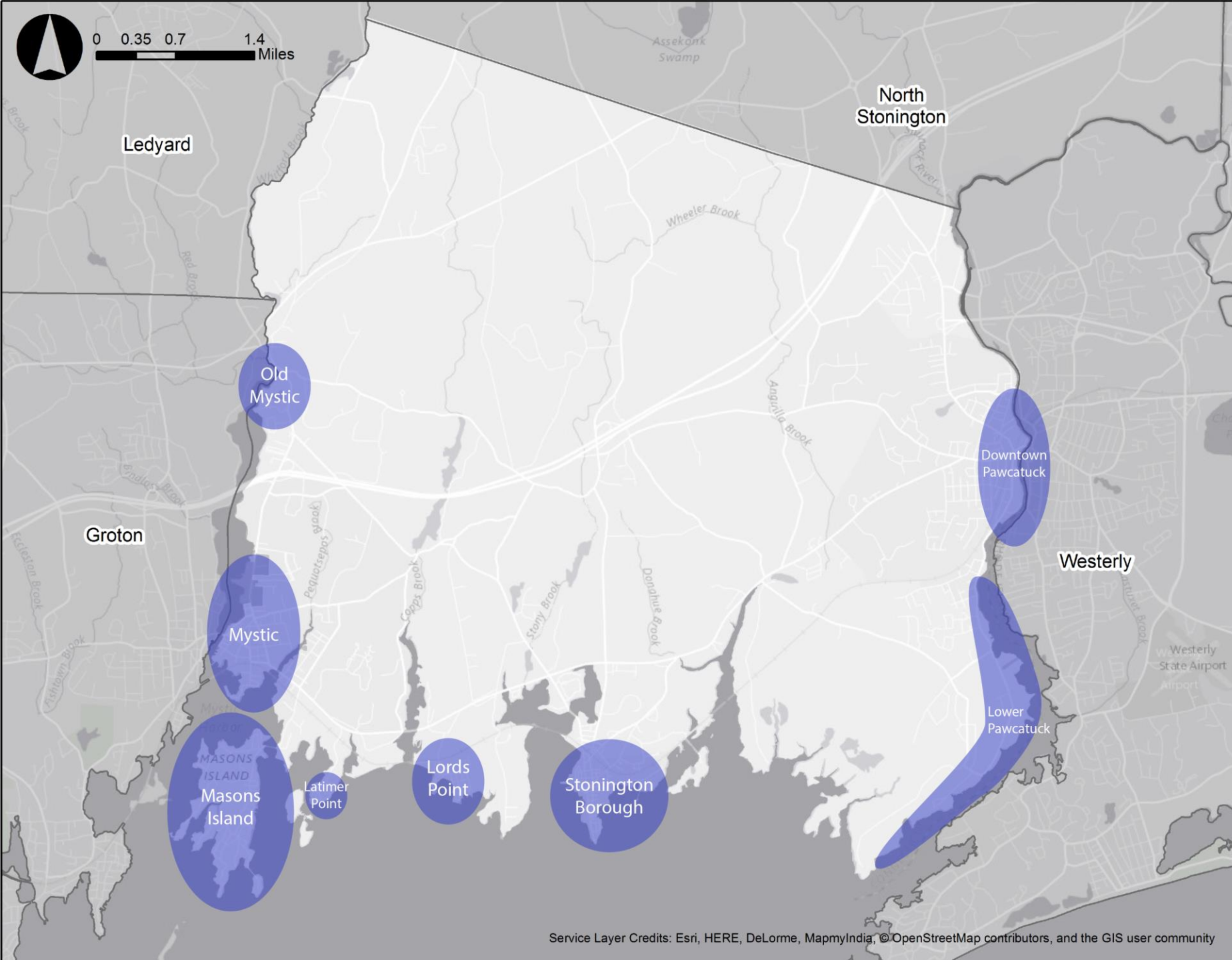
- Commercial and mixed-use strategies
- Natural retention and pooling areas
- Green infrastructure corridor
- Protection for critical community asset
- Alternative travel route
- Community greenspace for flood retention area
- Residential mitigation strategies
- Riverine flood barriers
- Appropriate land uses encouraged for water-adjacent areas

Solution #4: Mystic Neighborhood



Solution #5: Masons Island Causeway

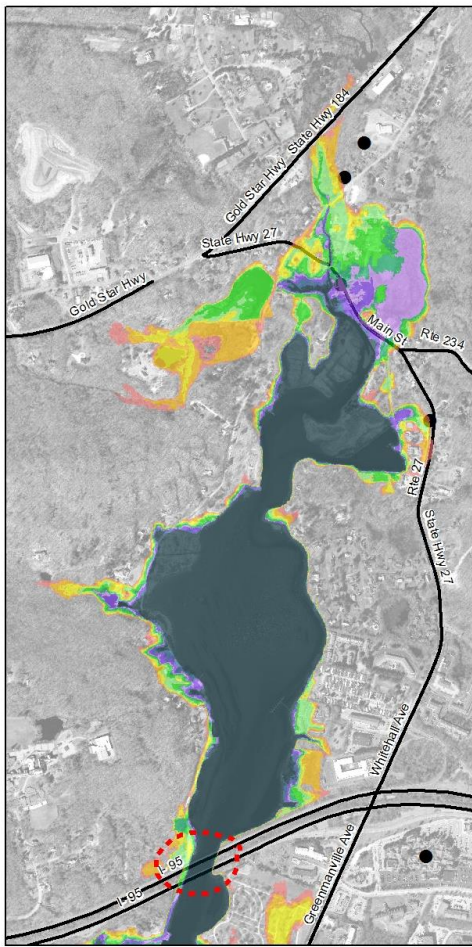
Regional Adaptations



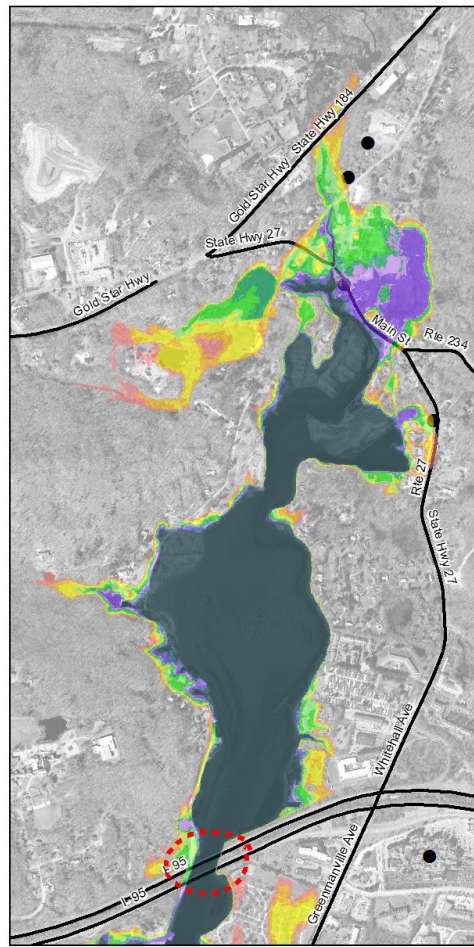
Neighborhoods

Most Vulnerable:

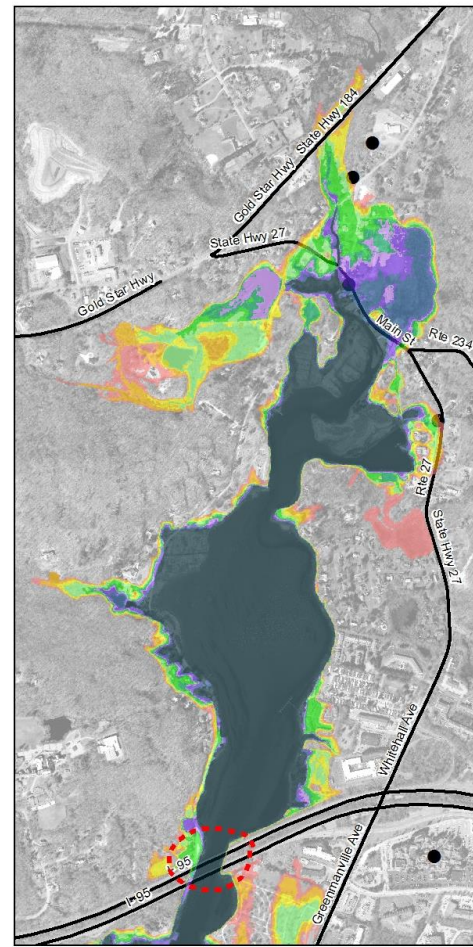
- Mystic / Murphy's Point
- Lords Point



Present



2030

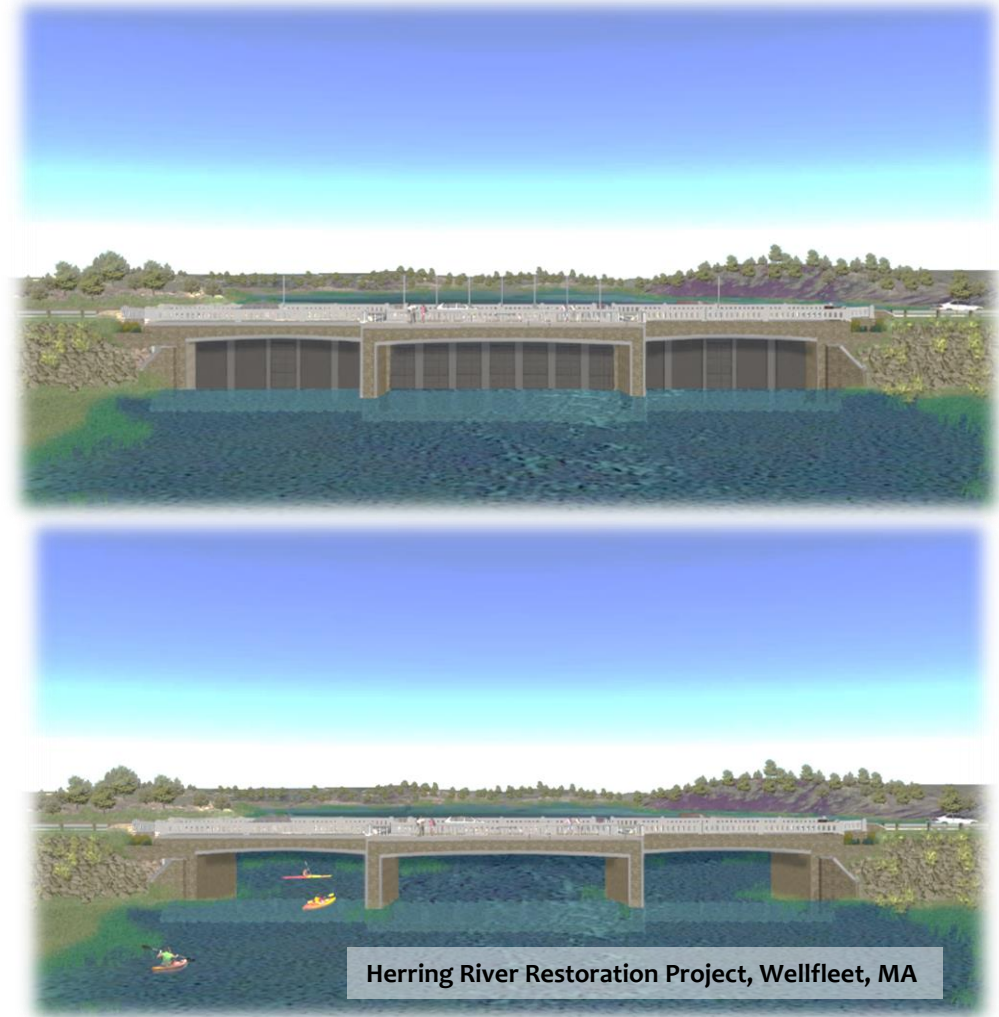
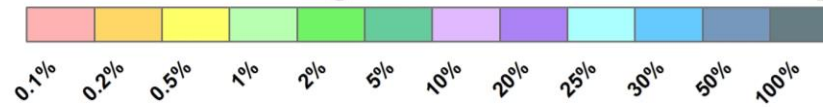


2050

0 500 1000 2000 Meters



Stonington Inundation Probability

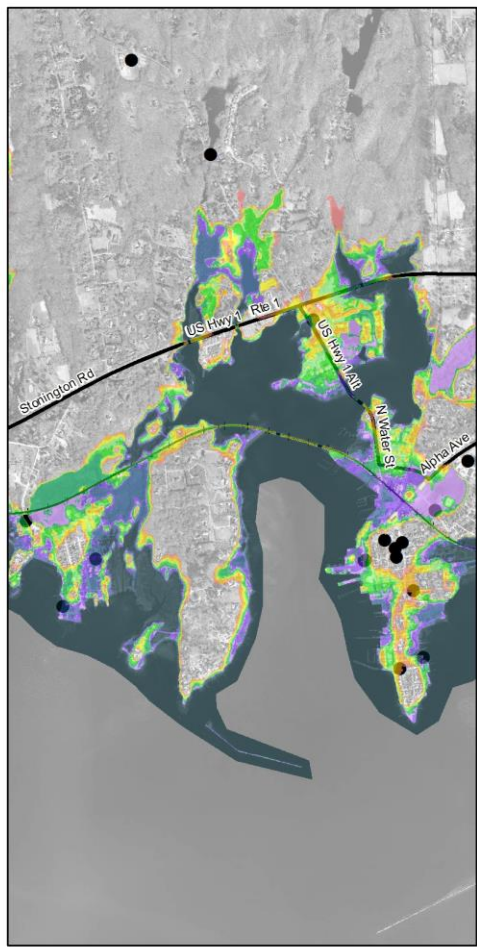


Herring River Restoration Project, Wellfleet, MA

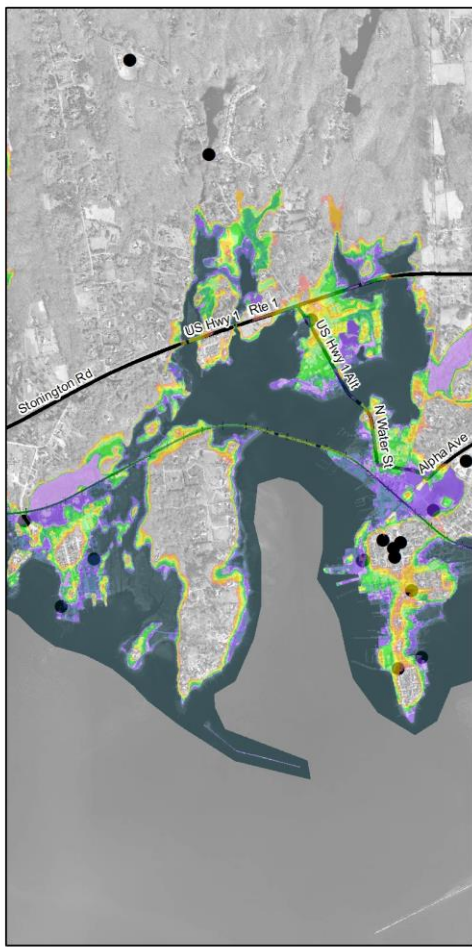


I-95 Regional Adaptation Option

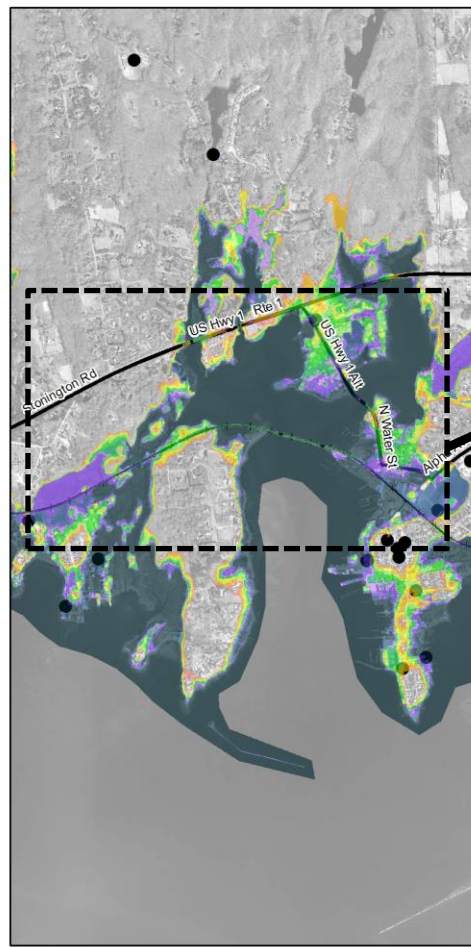
ARUP



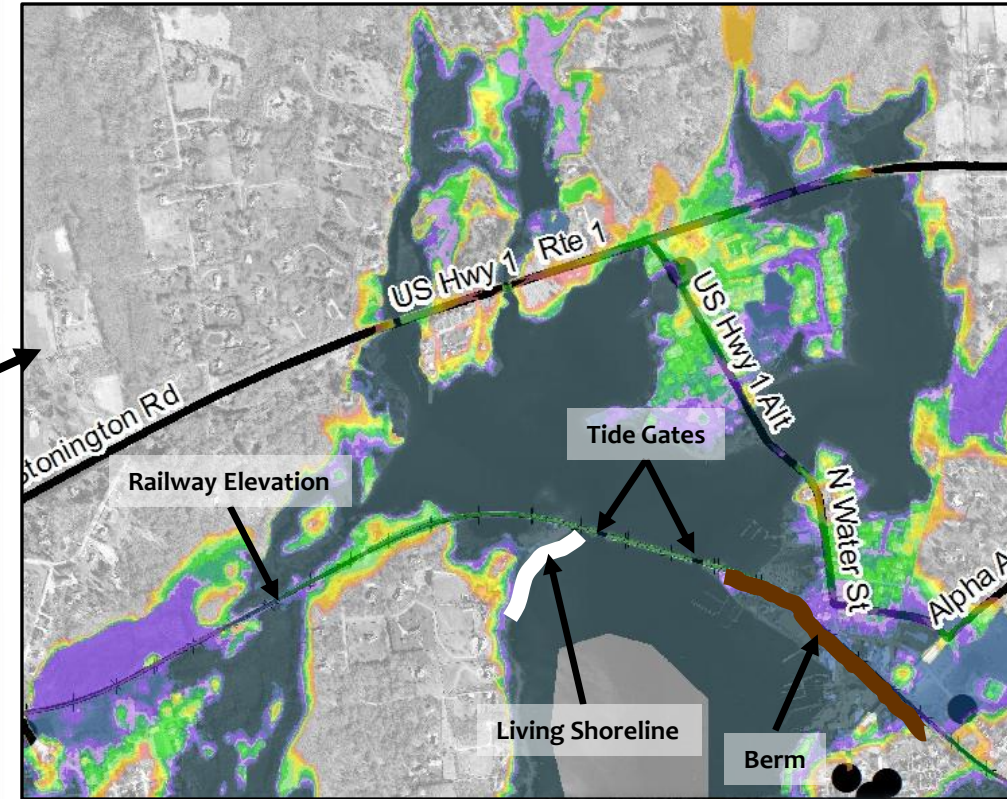
Present



2030



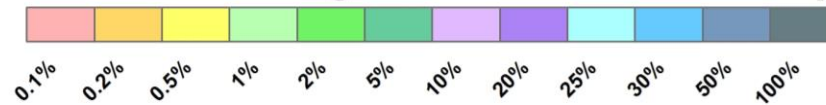
2050



0 500 1000 2000 Meters



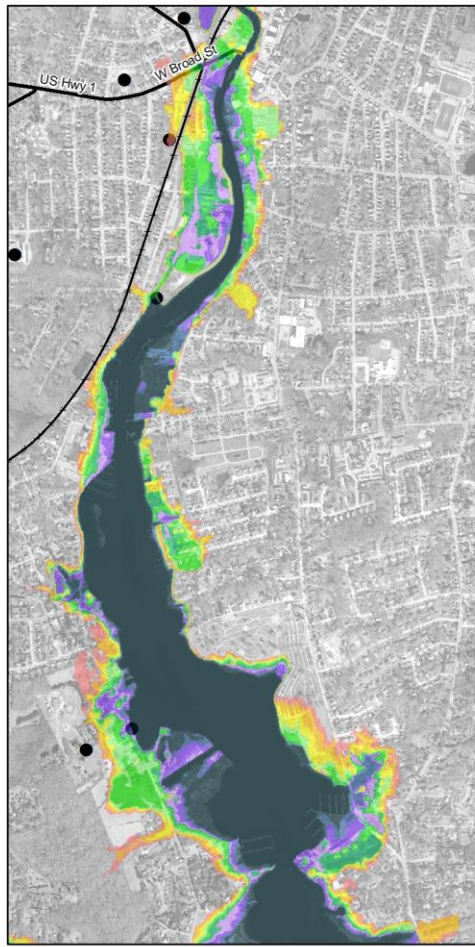
Stonington Inundation Probability



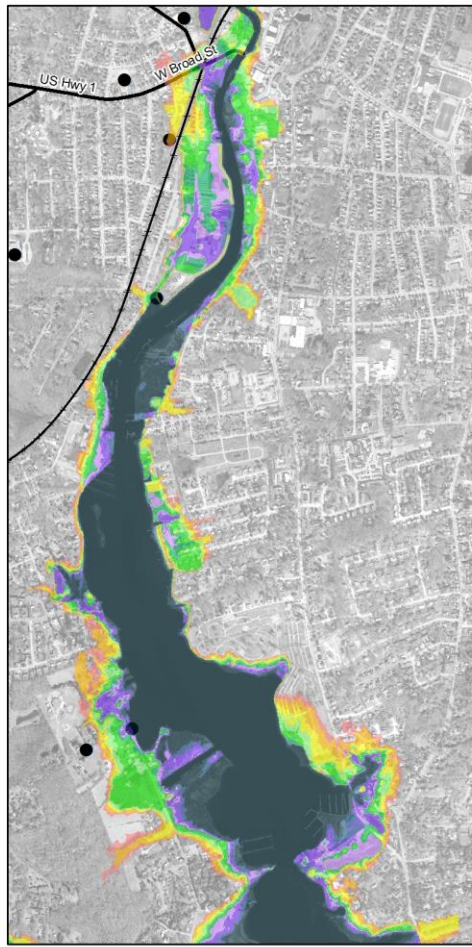
Tide Gates



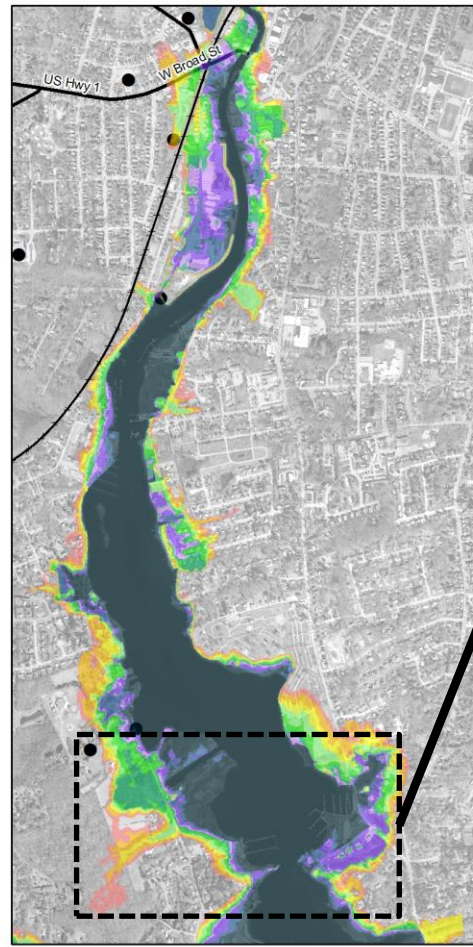
Stonington Borough Regional Adaptation Option



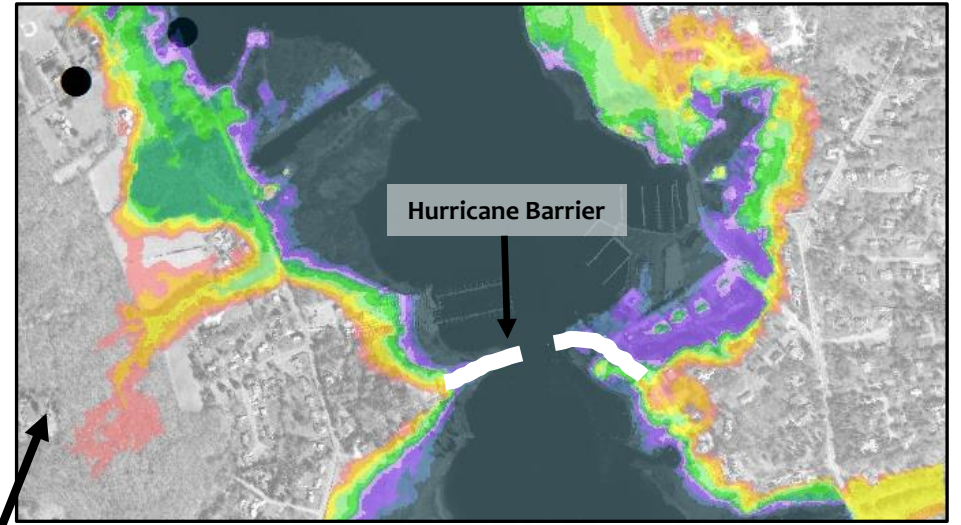
Present



2030



2050

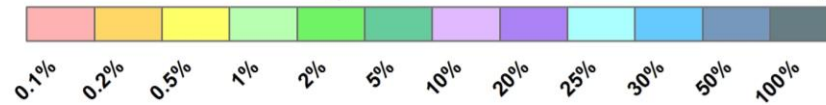


Hurricane Barrier - New Bedford, MA

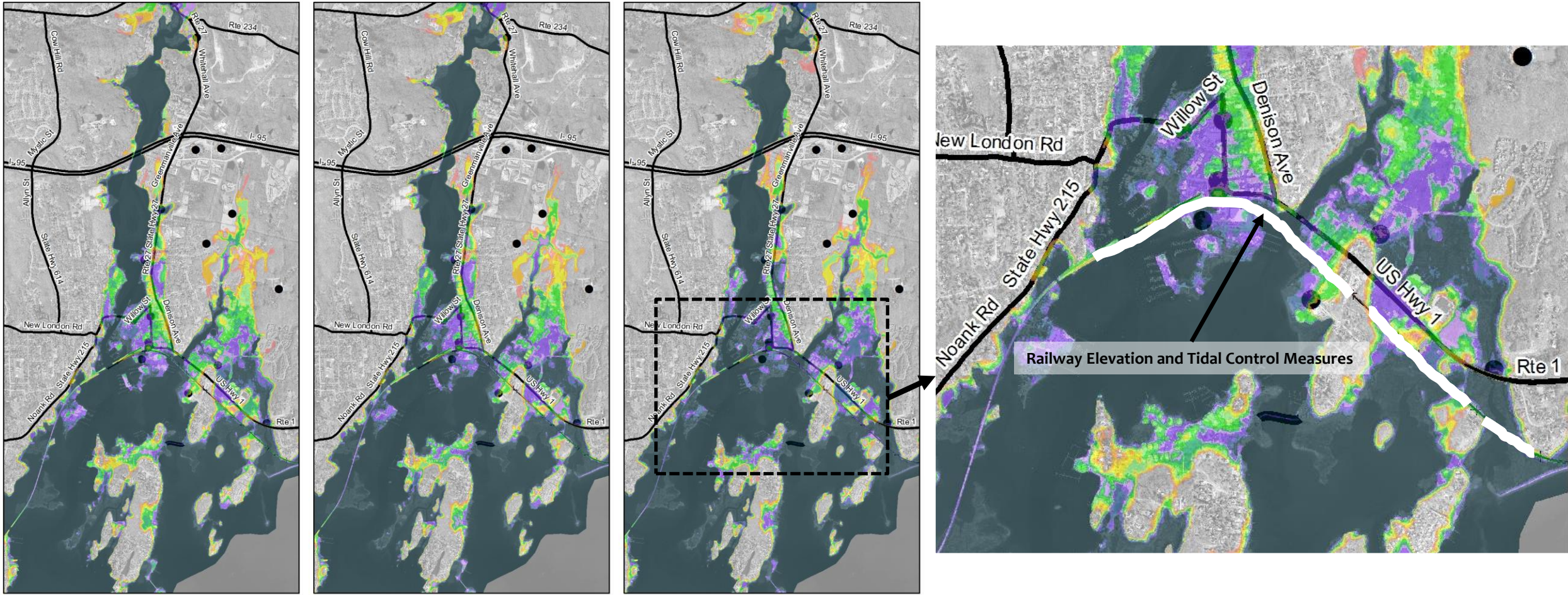
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Stonington Inundation Probability



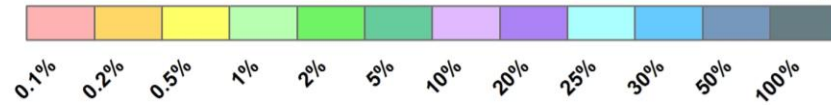
Pawcatuck River Regional Adaptation Option



0 500 1000 2000 Meters



Stonington Inundation Probability



Mystic Regional Adaptation Option

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Next Steps

Final Plan June 2017 with public meeting launch

Please make sure you signed in at the entry table.
You will be added to email list for project updates.

For additional information on the project, please
contact:

Keith Brynes

kbrynes@stonington-ct.gov

860-535-5095

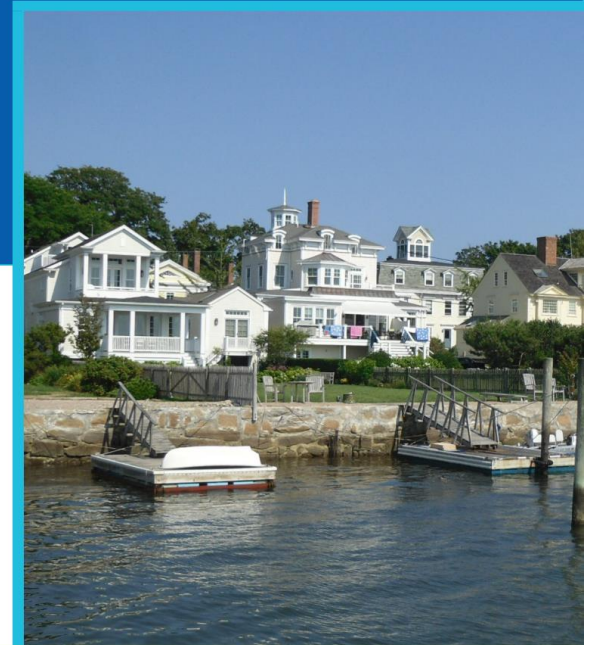
OR follow us on social media!

#StoningtonReady

@StoningtonCTGov

@ArupAmericas

Town of Stonington
Coastal Resilience Plan



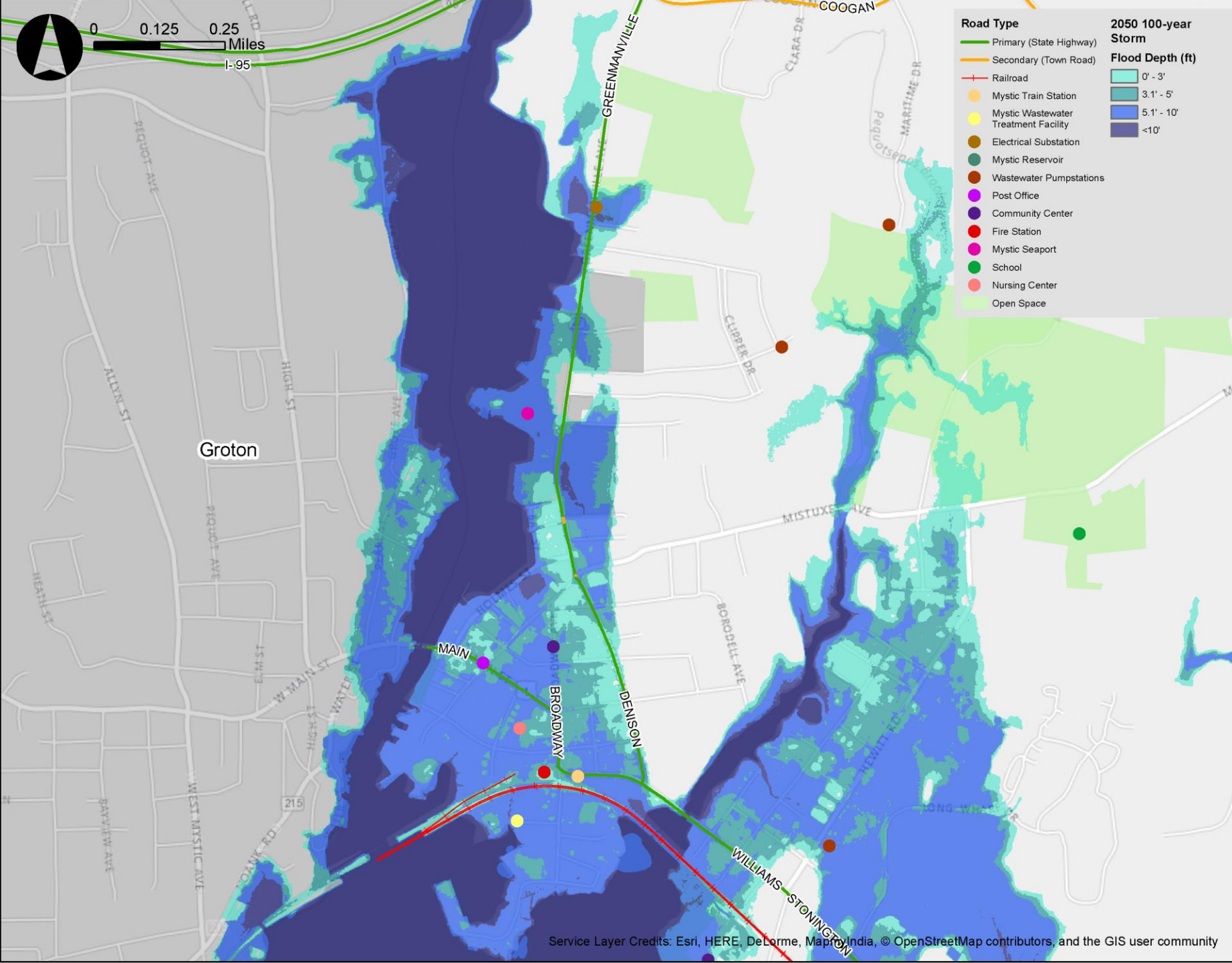
Questions and Group Discussion

Storm Scenario: A 100-year storm event hits Stonington, causing major coastal flooding and knocking out electricity in the town for one week.

Group Discussion:

1. What are you most worried about during this event? (This can include concerns about particular assets or infrastructure in the community, concerns about the health and safety of you and your family, concerns about access to transportation in order to get to work, etc.)
2. Do you have any ideas on how the town can be better prepared and/or better protected against this type of event?

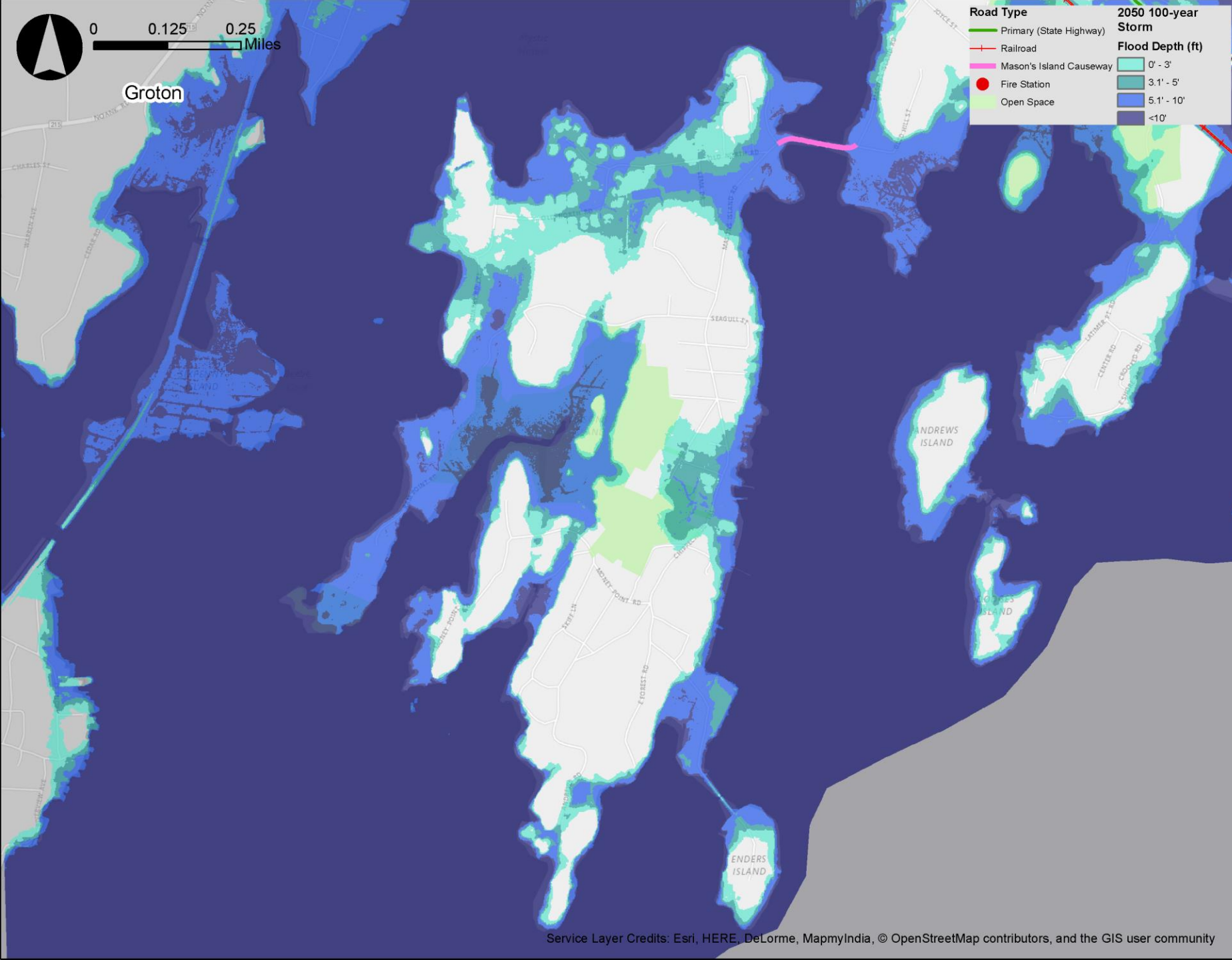
Extra Slides (not to be presented)



Mystic

Vulnerable Assets:

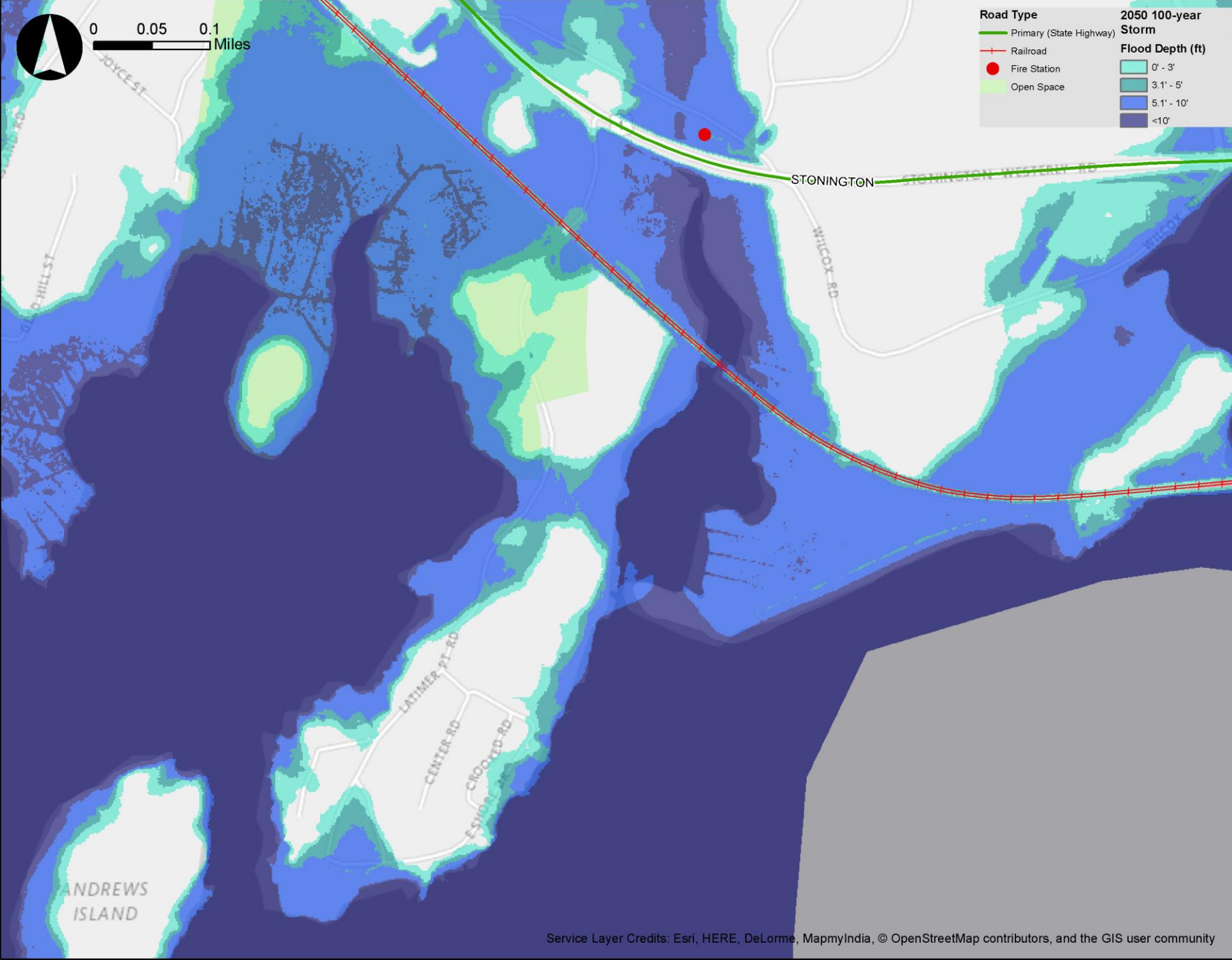
- Amtrak Rail Line
- Greenmanville Ave/Denison Ave
- Stonington Rd
- Main St
- Greenmanville Ave Substation
- Mystic Seaport
- Mystic Post Office
- Former Fourth District Voting Hall
- Apple Rehab Mystic
- Mystic Fire Department
- Mystic Wastewater Treatment Facility
- Open Space



Masons Island

Vulnerable Assets:

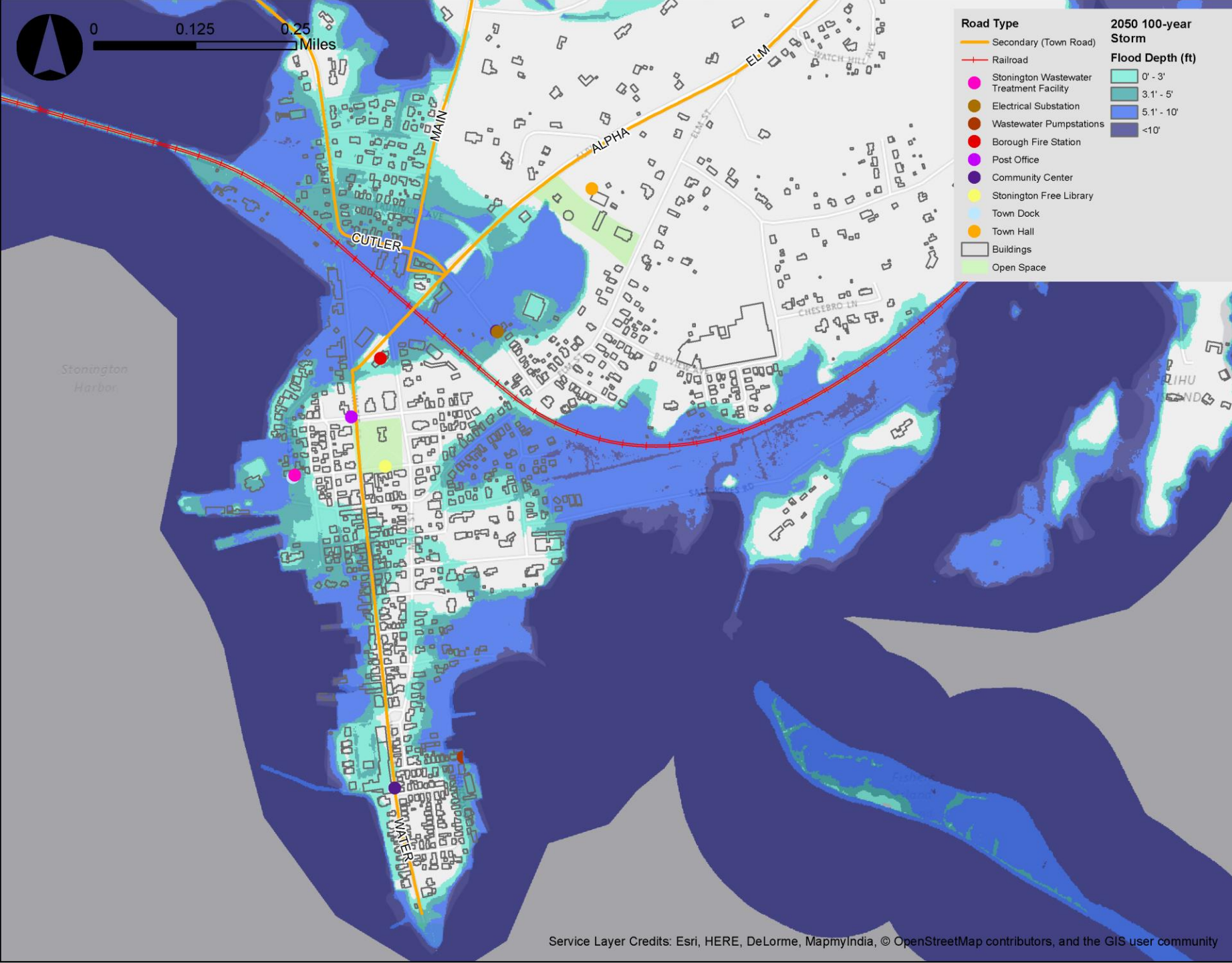
- Mason's Island Causeway
- Open Space



Latimer Point

Vulnerable Assets:

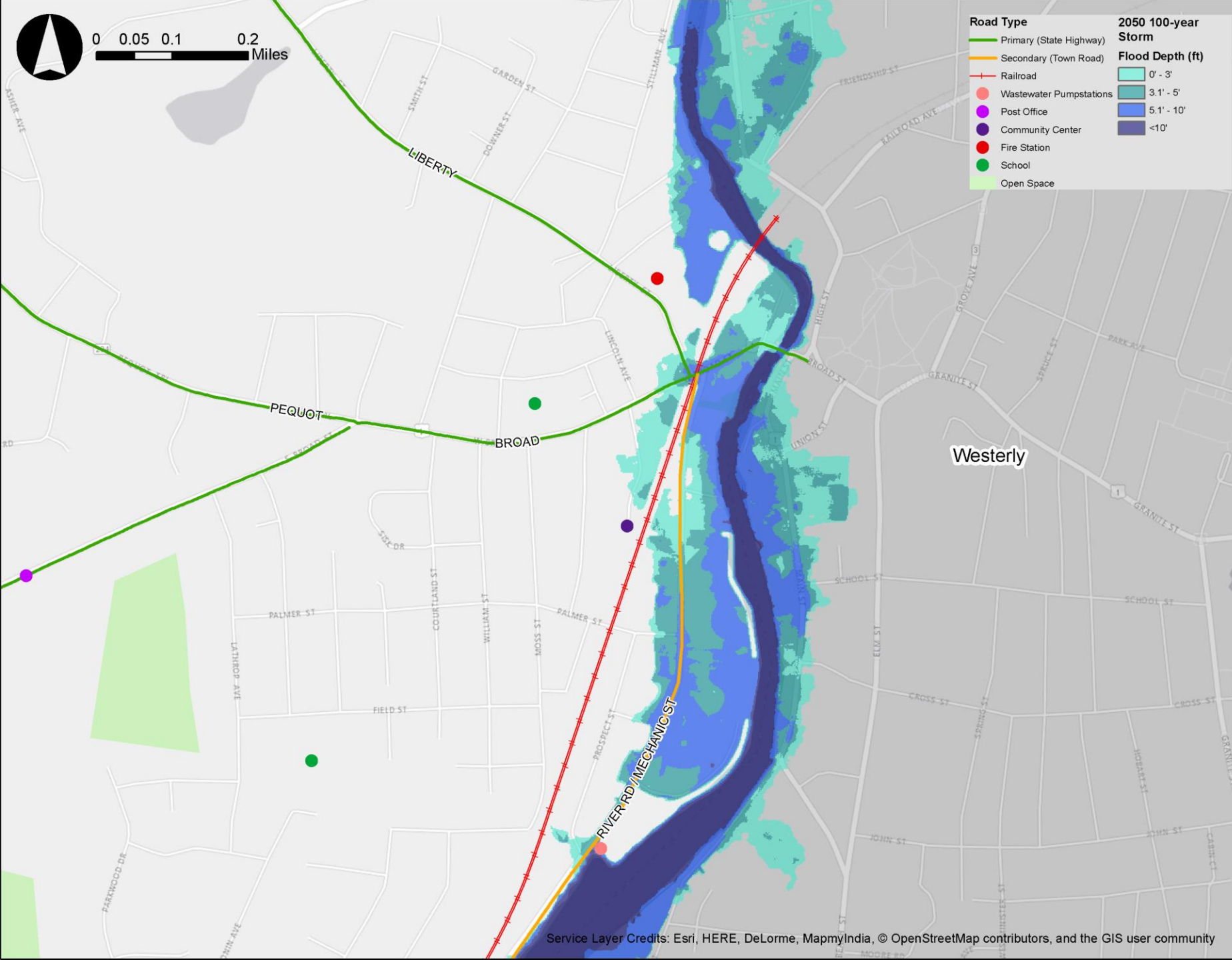
- Amtrak Rail Line
- Stonington Road
- Open Space
- Quiambaug Fire Department



Stonington Borough

Vulnerable Assets:

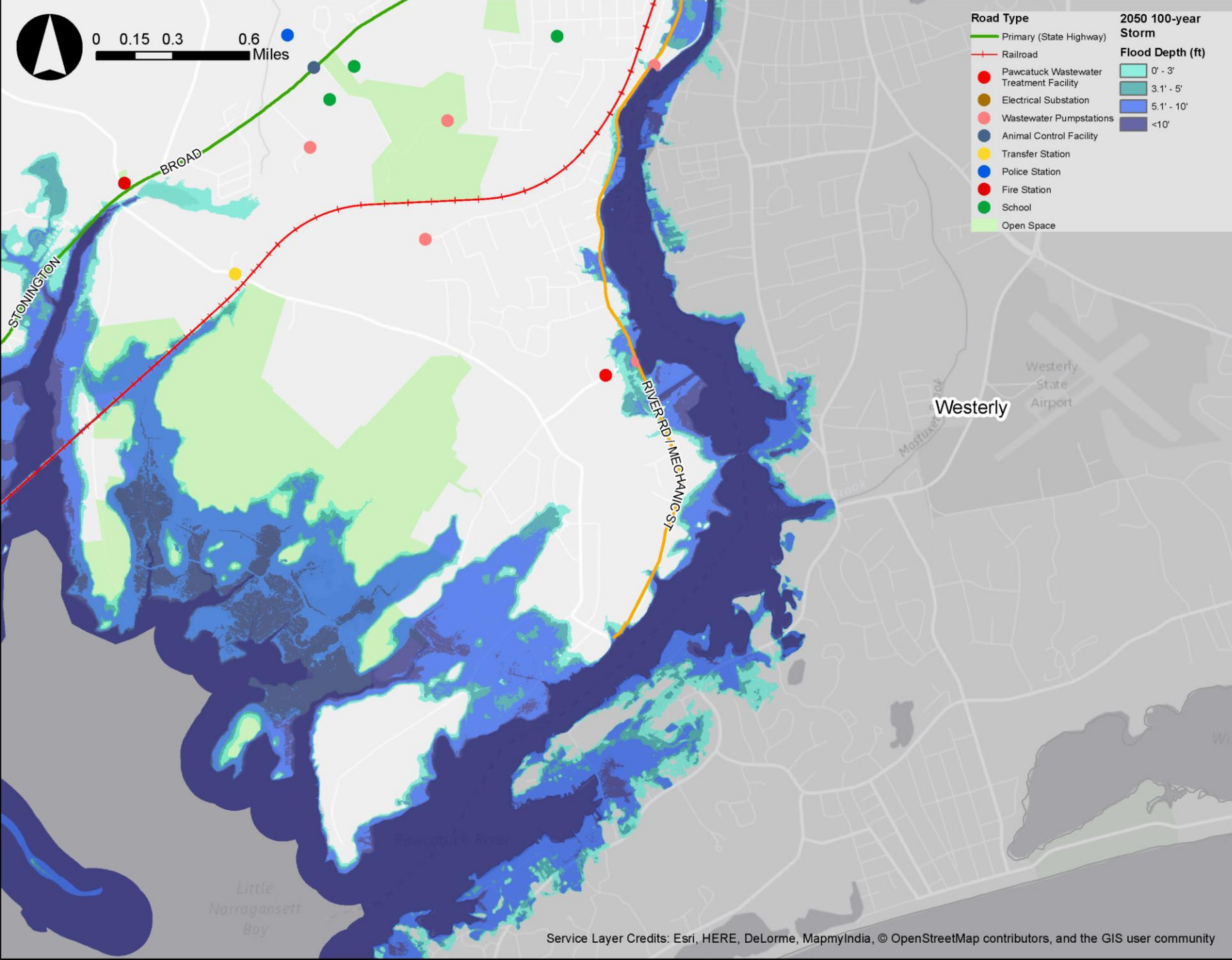
- Amtrak Rail Line
- Water St
- Main St
- Cutler St
- Alpha Ave/Elm St
- Cutler St Electrical Substation
- Stonington Community Center
- Stonington Wastewater Treatment Facility
- Borough Fire Station
- La Grua Center
- Open Space



Downtown Pawcatuck

Vulnerable Assets:

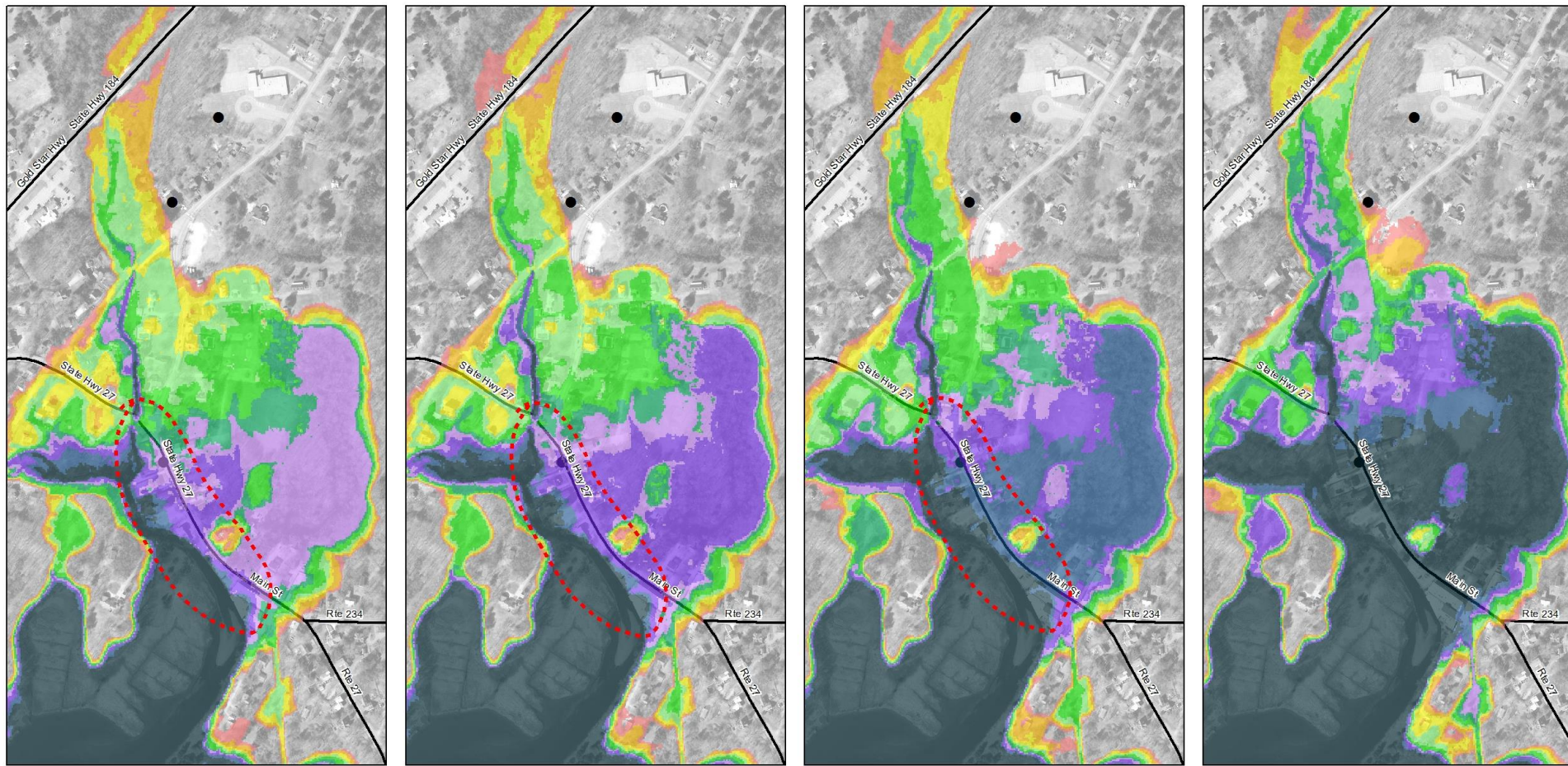
- Amtrak Rail Line
- River Rd/Mechanic St
- Broad St
- Liberty Rd
- Pump Station



Lower Pawcatuck

Vulnerable Assets:

- Amtrak Rail Line
- River Rd/Mechanic St
- Wastewater Pump Station



Present

2030

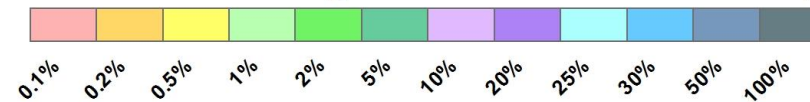
2050

2070

0 100 200 400 Meters

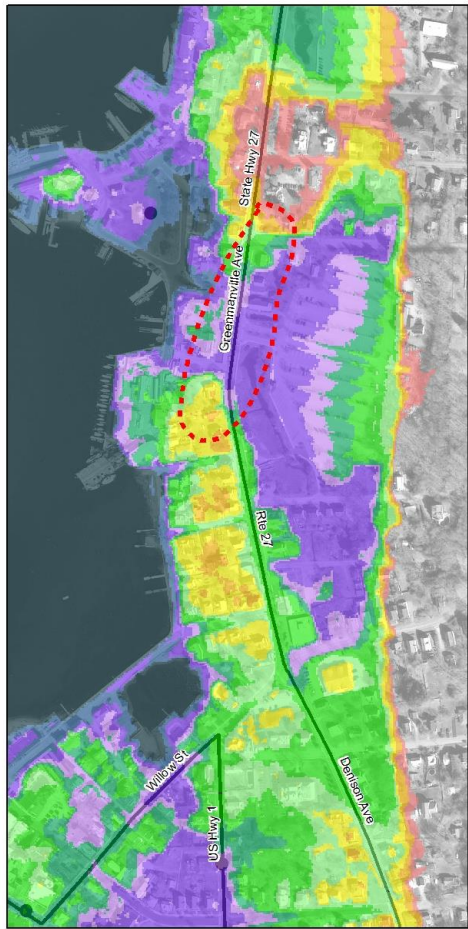


Stonington Inundation Probability

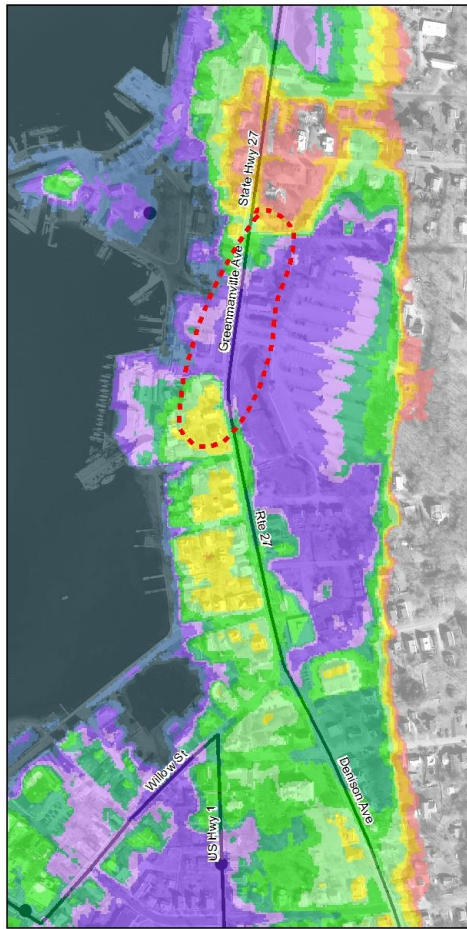


Old Mystic Regional Adaptations

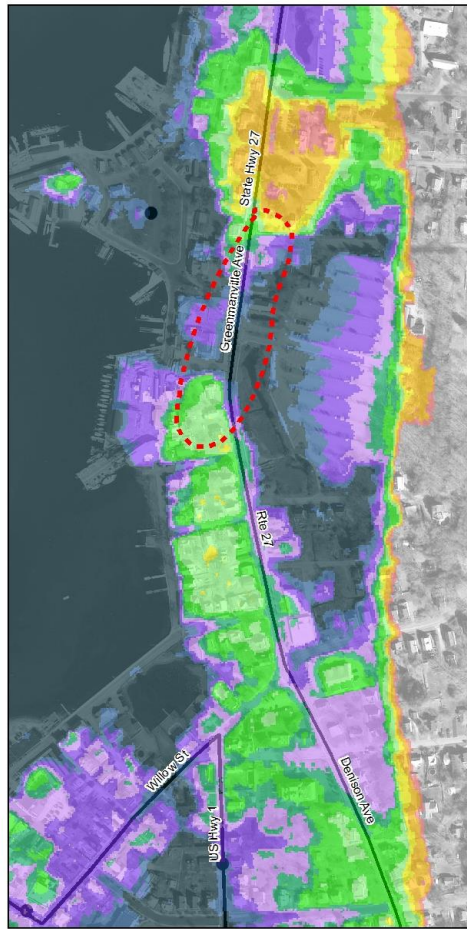
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Present



2030



2050



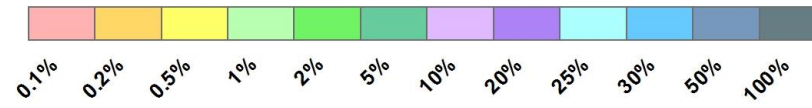
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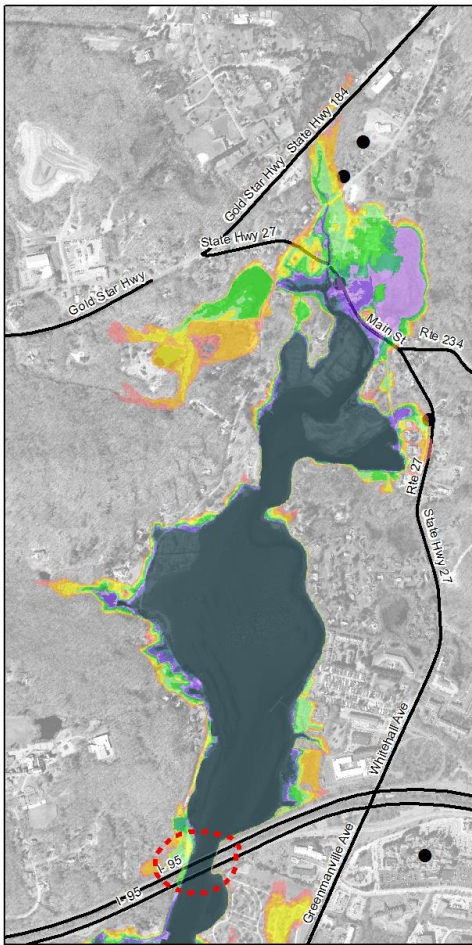
0 100 200 400 Meters



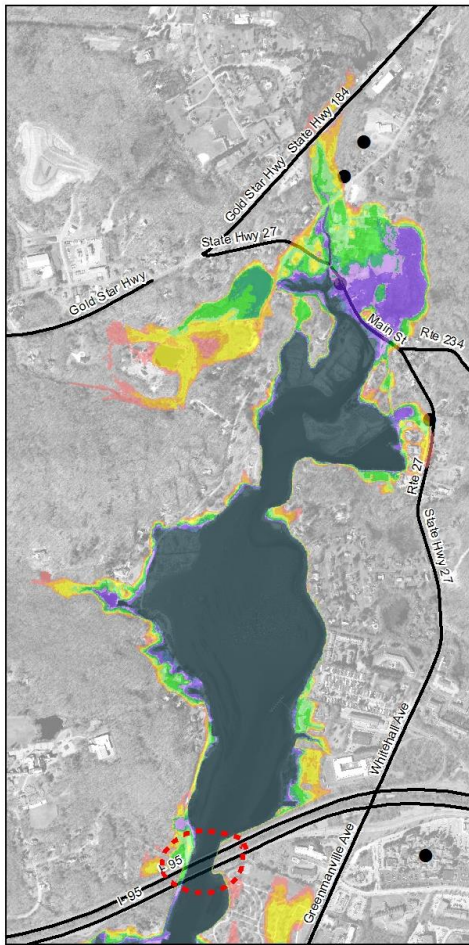
Stonington Inundation Probability



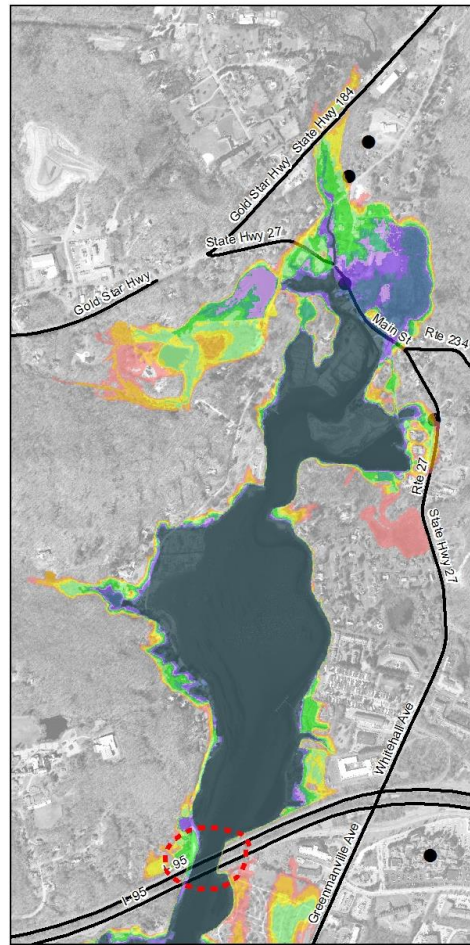
Mystic Flood Pathways



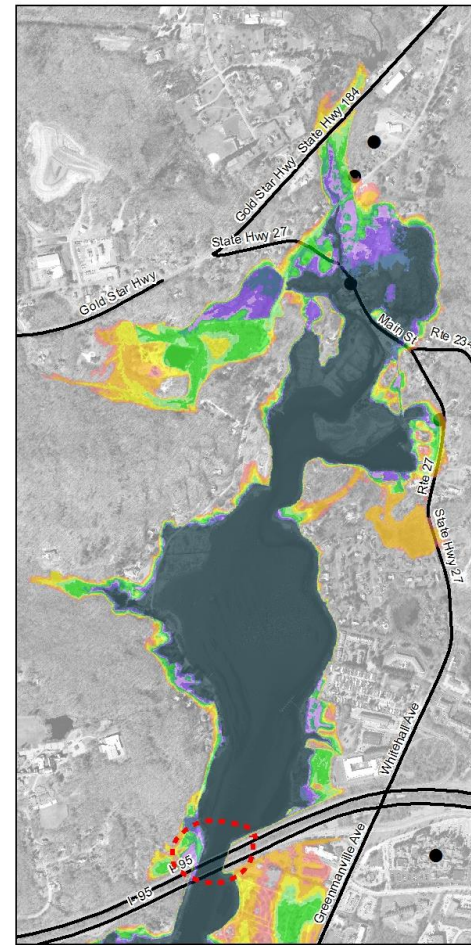
Present



2030



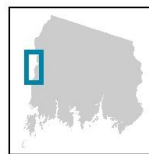
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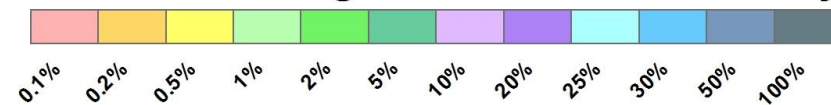
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0 250 500 1000 Meters

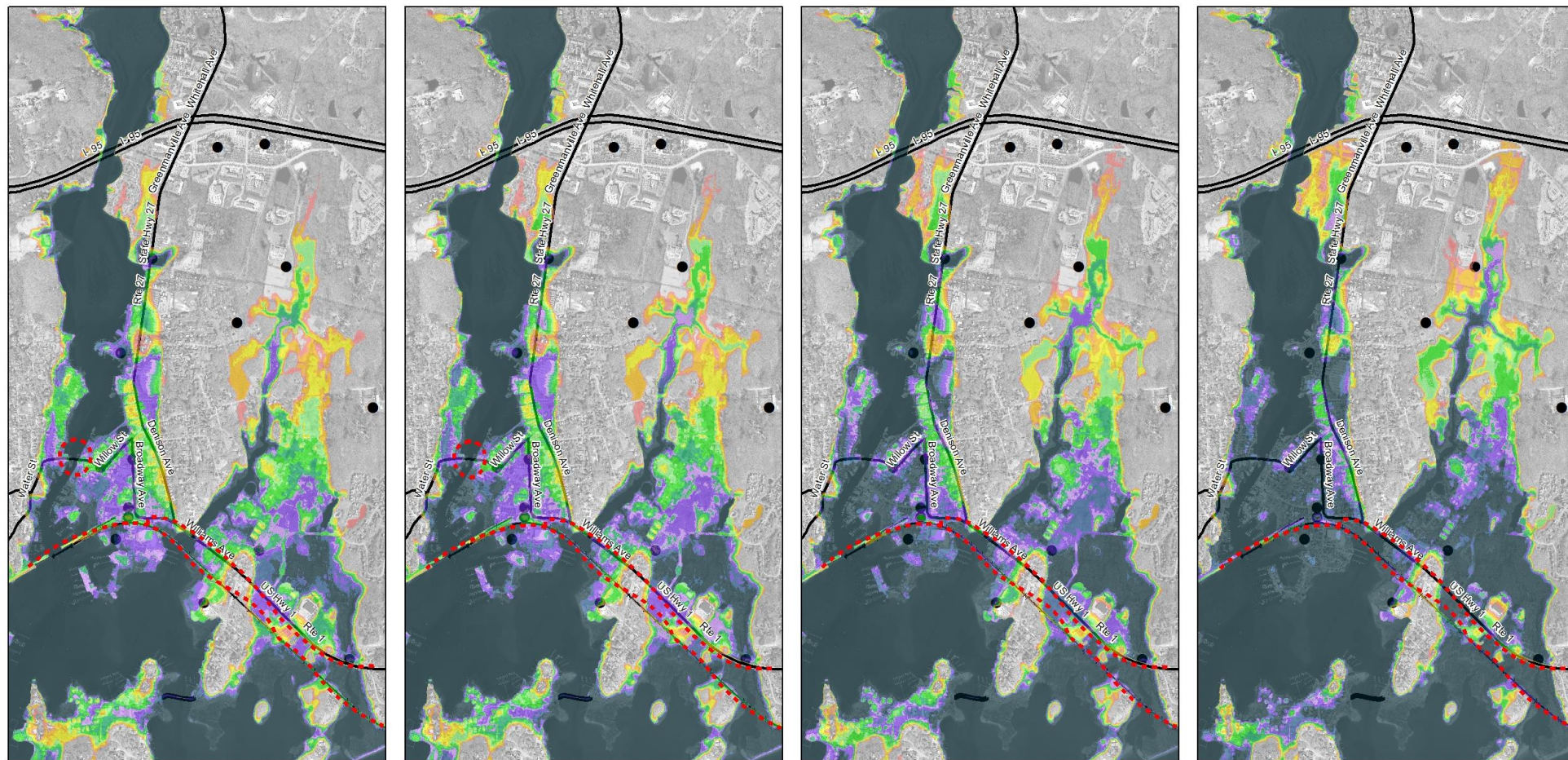


Stonington Inundation Probability



I-95 Regional Adaptations

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Present

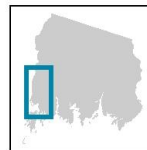
2030

2050

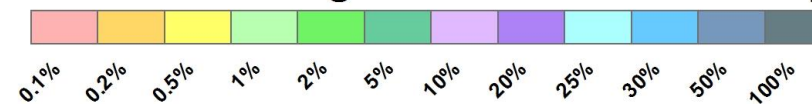
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0 500 1000 2000 Meters

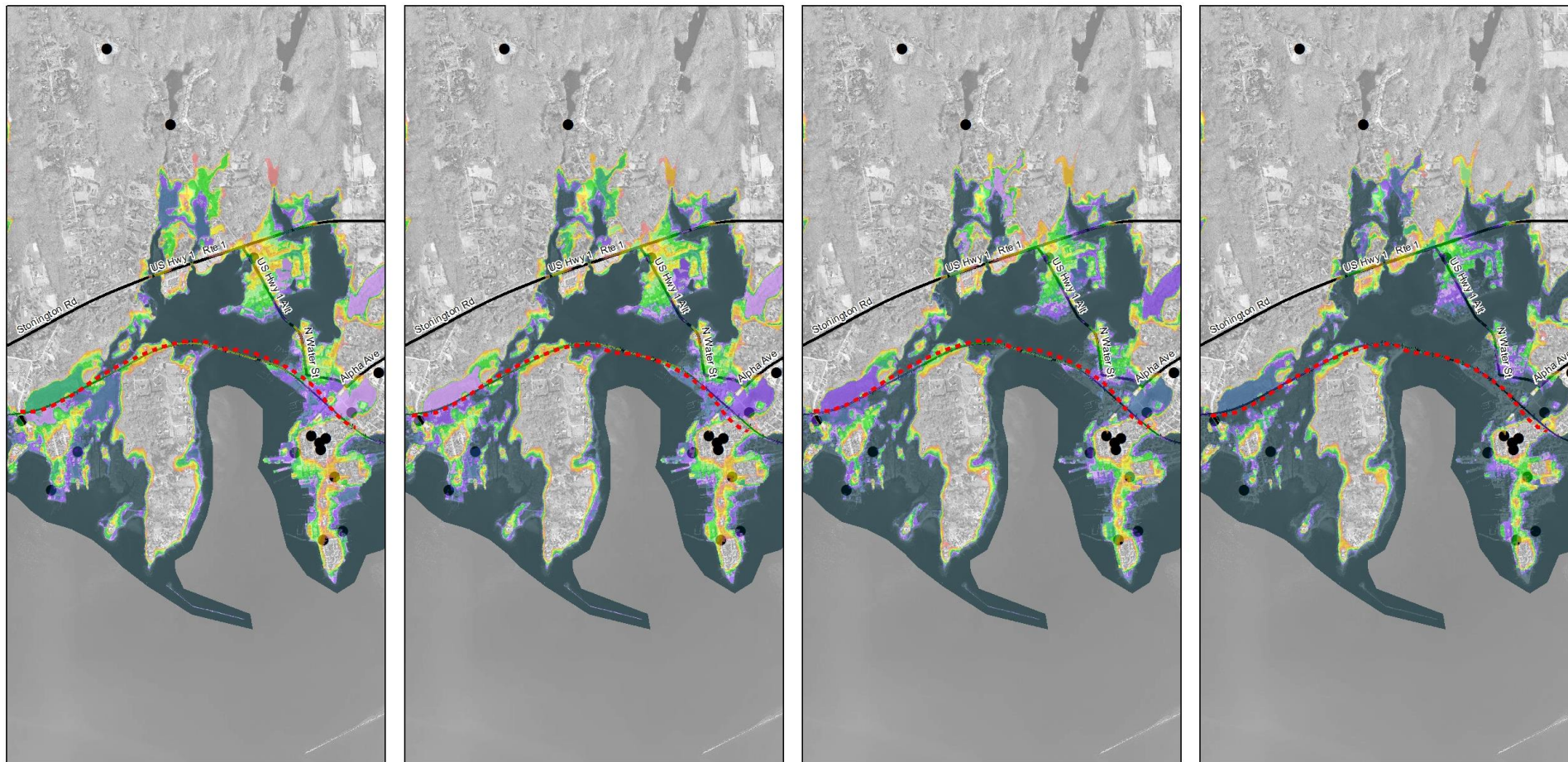


Stonington Inundation Probability



Mystic & Latimer Point Regional Adaptations

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Present

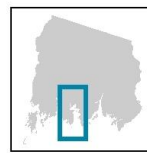
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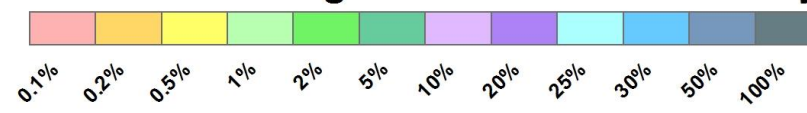
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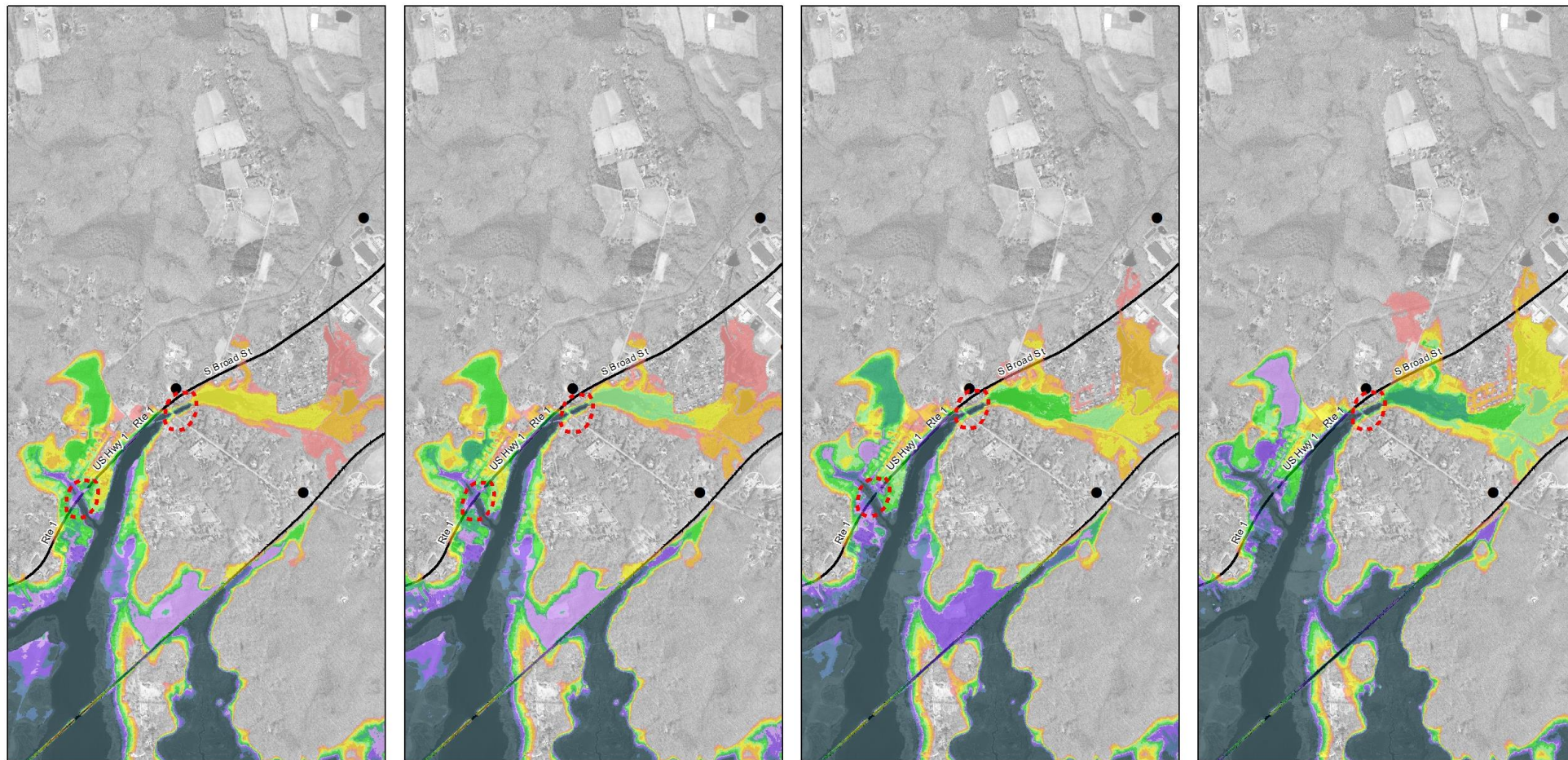


Stonington Inundation Probability



Amtrak Rail Line Regional Adaptations

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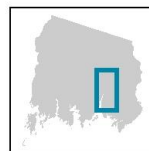
Present

2030

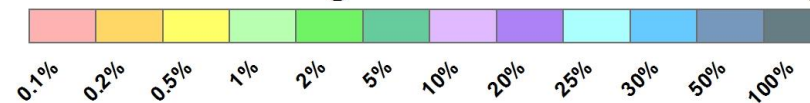
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2070

0 500 1000 2000 Meters

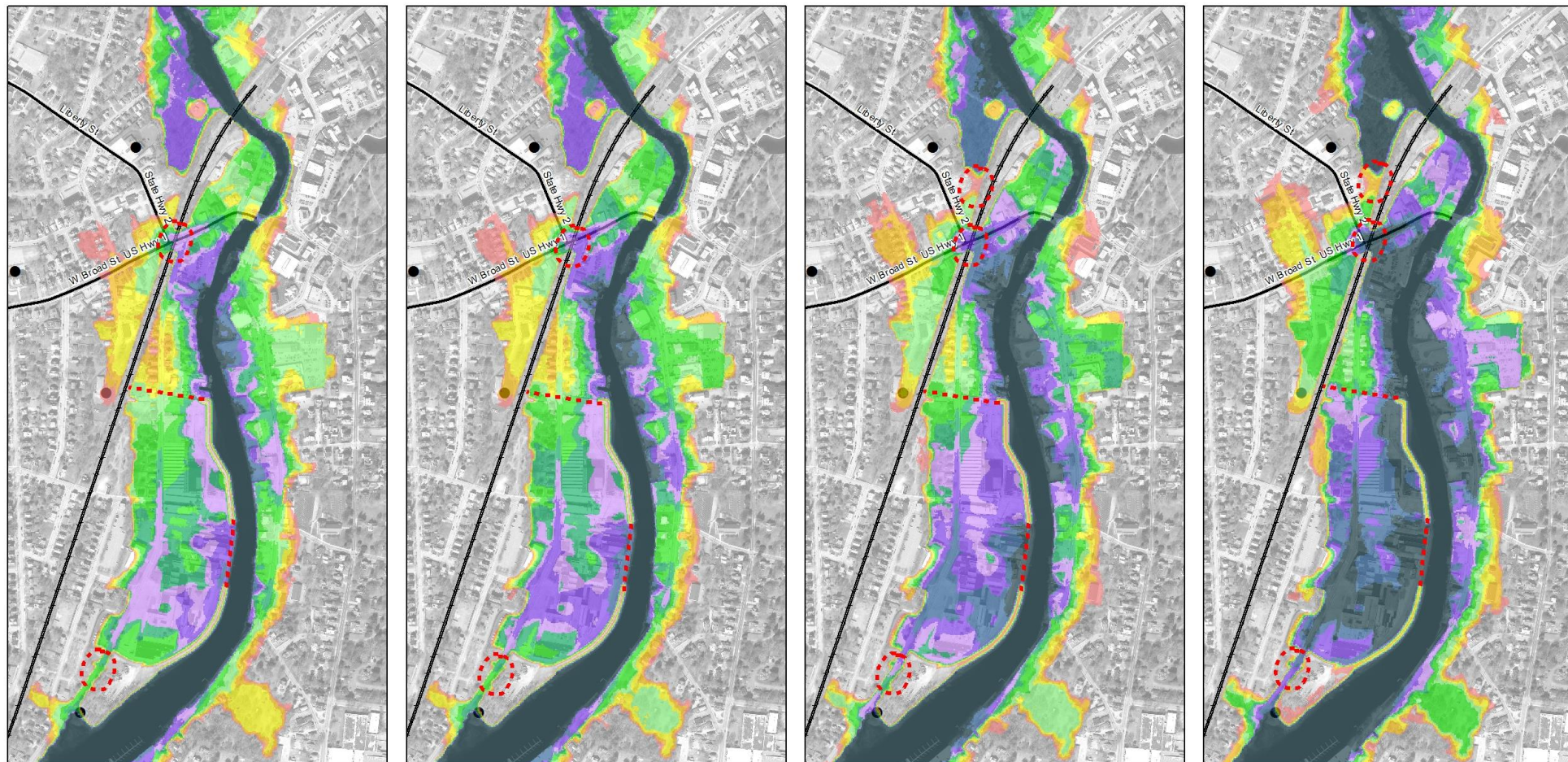


Stonington Inundation Probability



Route 1 Regional Adaptations

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Present

2030

2050

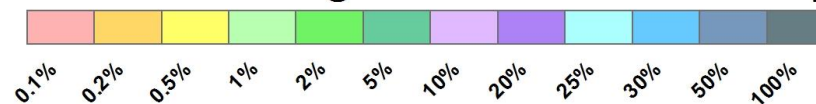
2070



0 200 400 800 Meters



Stonington Inundation Probability



Downtown Pawcatuck Flood Pathways